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United States  
Department of  
Agriculture



Forest Service

Forest Pest  
Management

Davis, CA

# EMCOT Meteorological Data 1993 Utah Gypsy Moth Eradication Program

Pesticides used improperly can be injurious to human beings, animals, and plants. Follow the directions and heed all precautions on labels. Store pesticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides where there is danger of drift when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment, if specified on the label.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

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**NOTE:** Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the U.S. Environmental Protection Agency, consult your local forest pathologist, county agriculture agent, or State extension specialist to be sure the intended use is still registered.



FPM 95-3  
January 1995

EMCOT Meteorological Data  
1993 Utah Gypsy Moth  
Eradication Program

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## PREFACE

Meteorological data were collected from three EMCOT towers (Ekblad, Windell and Thompson 1990) in support of the 1993 Utah Gypsy Moth Eradication Program. The program was conducted by the USDA Forest Service and the State of Utah in Mill Creek Canyon, Salt Lake County, on 28 May, 4 June and 10 June 1993 following the work plan developed by Barry et al. (1993). This report contains plots and listings of all recovered data, presented in ten-minute averages following the approach developed for the meteorological data reduction program METDAT (Teske 1992).

Milton E. Teske and John W. Barry join in thanking Harold W. Thistle, who coordinated the meteorological data acquisition for this project; Bruce S. Grim, who coordinated the U. S. Army Dugway Proving Ground support; John Anhold, who directed the eradication project; and Mark Quilter, who provided coordination and assisted in many ways.



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## 1. DATA REDUCTION

The raw data provided by Harold W. Thistle (Missoula Technology and Development Center, private communication) were interpreted by a computer program extending the technique found in METDAT. Whereas the previous two Utah test phases (in 1991 and 1992) used the EMCOT towers in their original configuration, for this test additional sensors were added, and the raw data files were modified to include the additional data. METDAT was not revised, as further changes to the tower configuration may occur. A schematic of the 1993 test site is shown in Figure 1.

Modifications to the data included the following:

1. The one-second data added additional sensors at mid-height (3.5 m) to record the wind speed and wind direction, in addition to existing sensors for wind speed and wind direction at 6.1 m.
2. The one-minute data added a sensor for net radiation at 1.2 m.
3. The one-minute data for tower 1 also added a sensor for temperature at mid-height (3.5 m), in addition to temperature readings at 1.2 m and 6.1 m.

Three difficulties were encountered, and needed to be programmed around:

1. Tower 2 on 28 May 1993 recorded data every two seconds, rather than every one second.
2. The raw data from tower 2 on 28 May 1993 also contained an extraneous fragment of information that had to be edited out of the raw data file.
3. All wind directions had to be corrected 14.2 deg to true North.

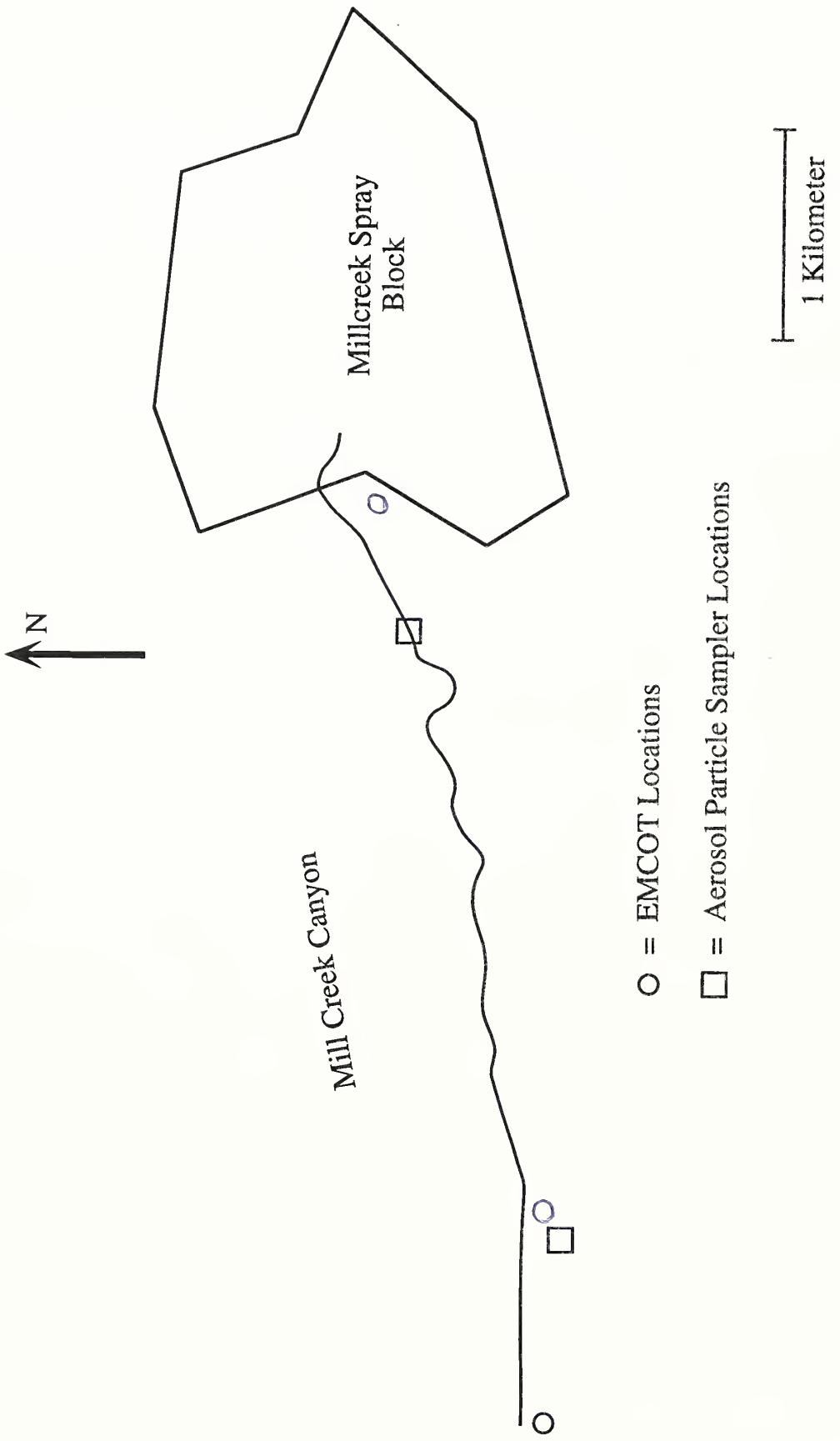


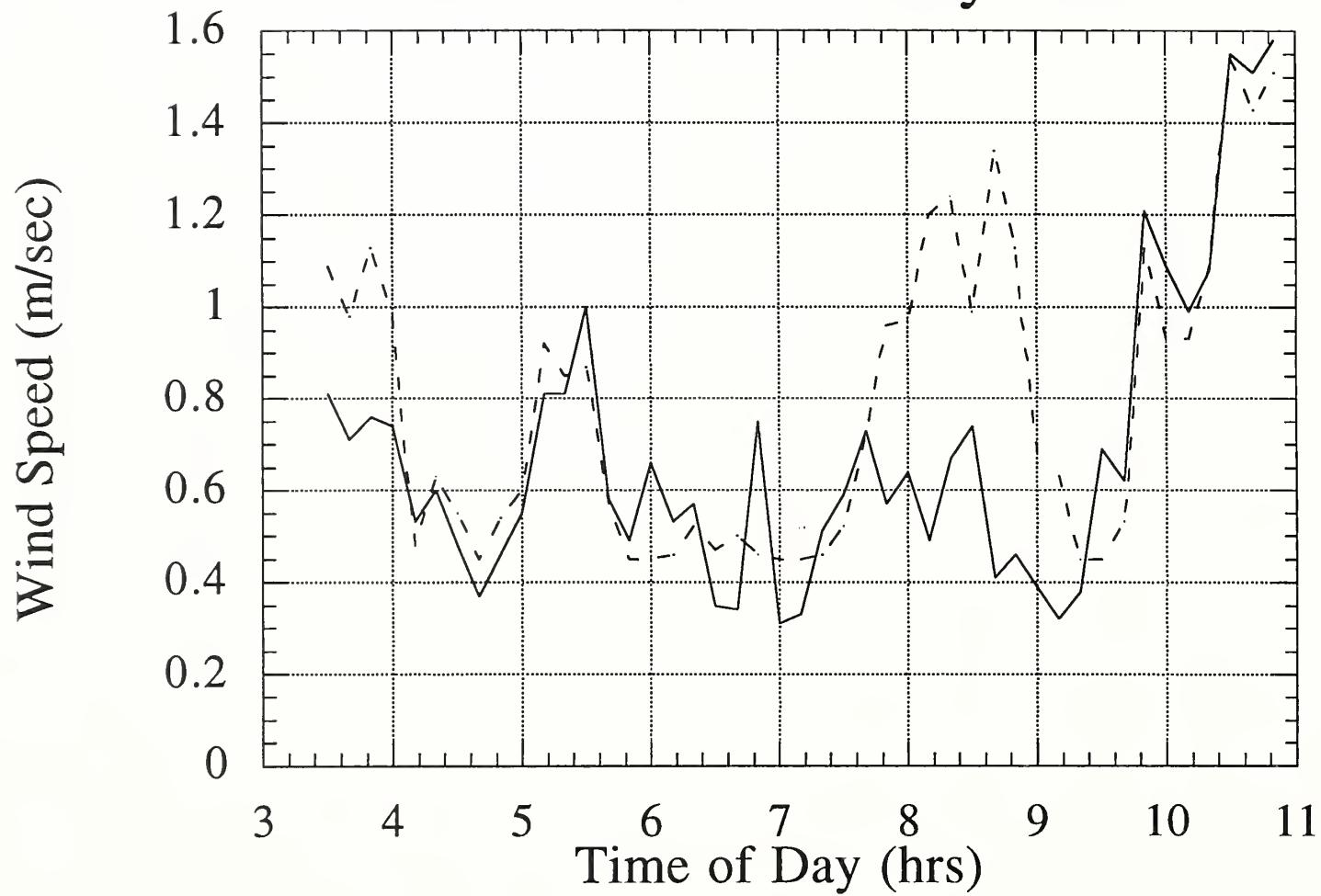
Figure 1. Schematic of the Utah 1993 test site.

## 2. DATA PRESENTATION

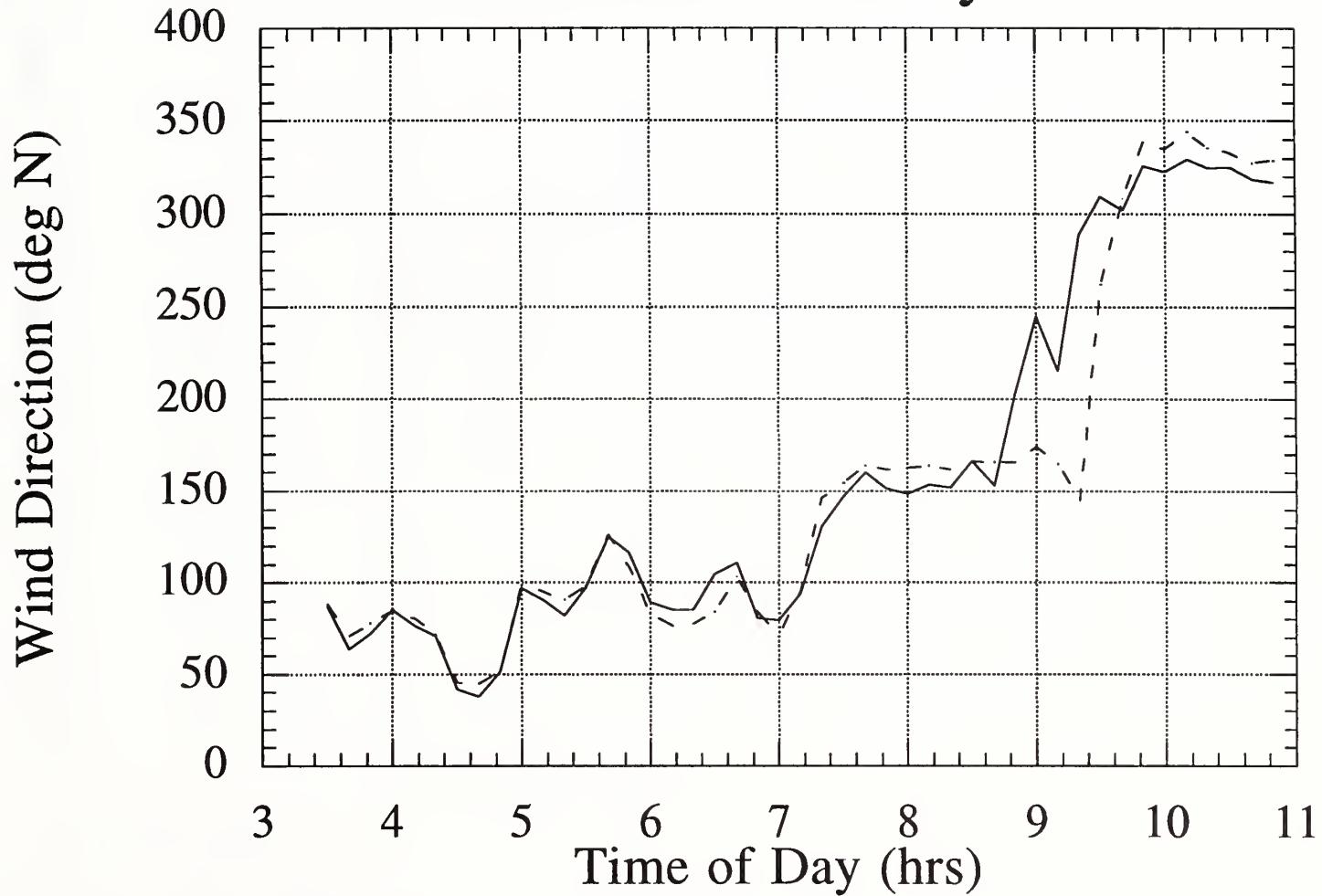
All available data are plotted on the next pages of this report. These include the following:

1. Wind speed (in m/sec) at mid-height (3.5 m, dashed line) and at the upper height (6.1 m, solid line). The mid-height sensor appears inoperative on tower 2 on 28 May and 4 June 1993.
2. Wind direction (in deg relative to North) at mid-height (3.5 m, dashed line) and at the upper height (6.1 m, solid line). The mid-height sensor appears inoperative on tower 2 for all three trials.
3. Azimuthal standard deviation (in rad) at mid-height (3.5 m, dashed line) and at the upper height (6.1 m, solid line). This turbulence parameter is developed from the technique suggested by Haugen (1963). The mid-height sensor appears inoperative on tower 2 for all three trials.
4. Temperature (in deg C) at the lower height (1.2 m, solid line), the upper height (6.1 m, dashed line), and, for tower 1, at mid-height (3.5 m, dotted line).
5. Relative humidity (in percent).
6. Net radiation (in Watts /sq m).

## EMCOT #1: 28 May 1993

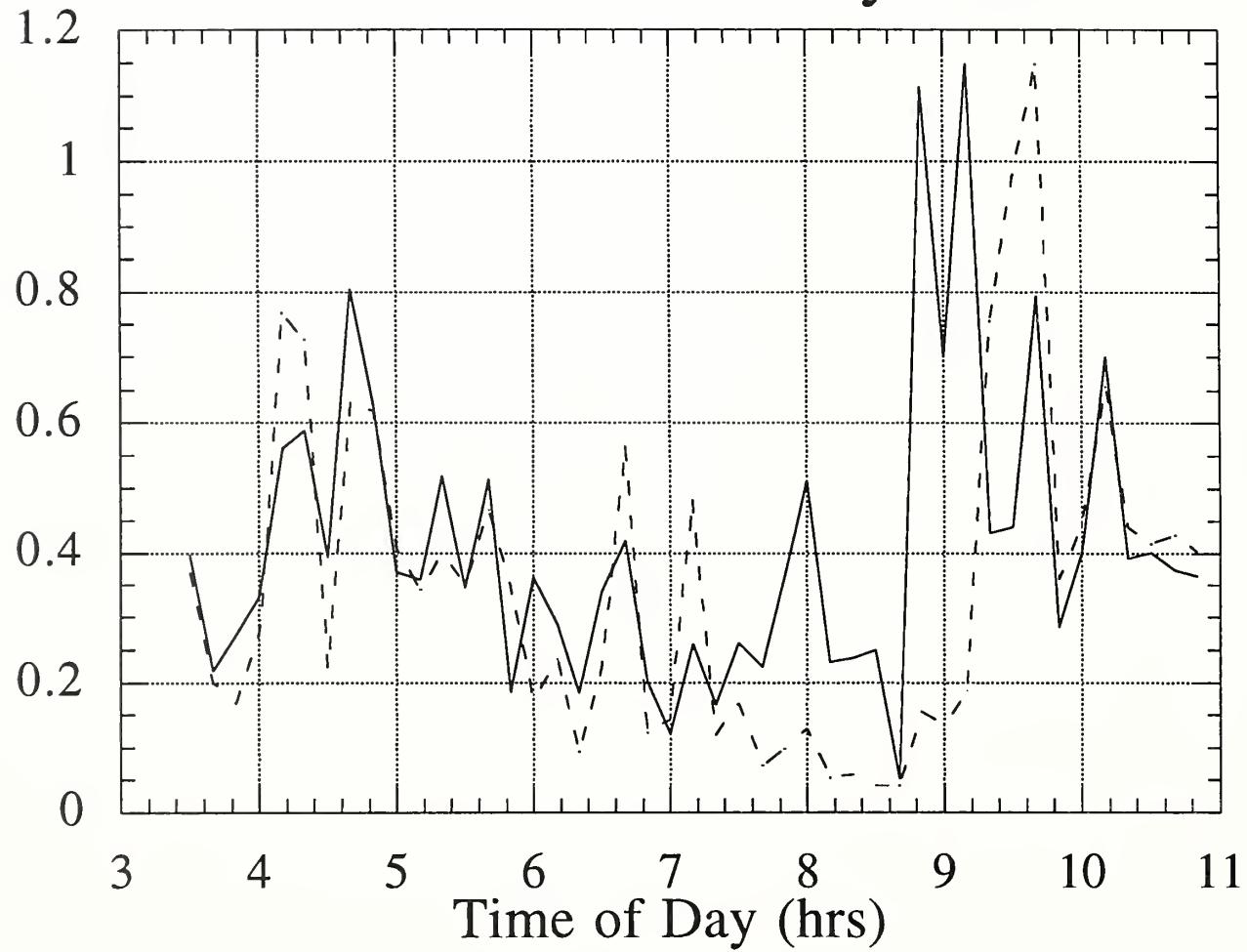


## EMCOT #1: 28 May 1993

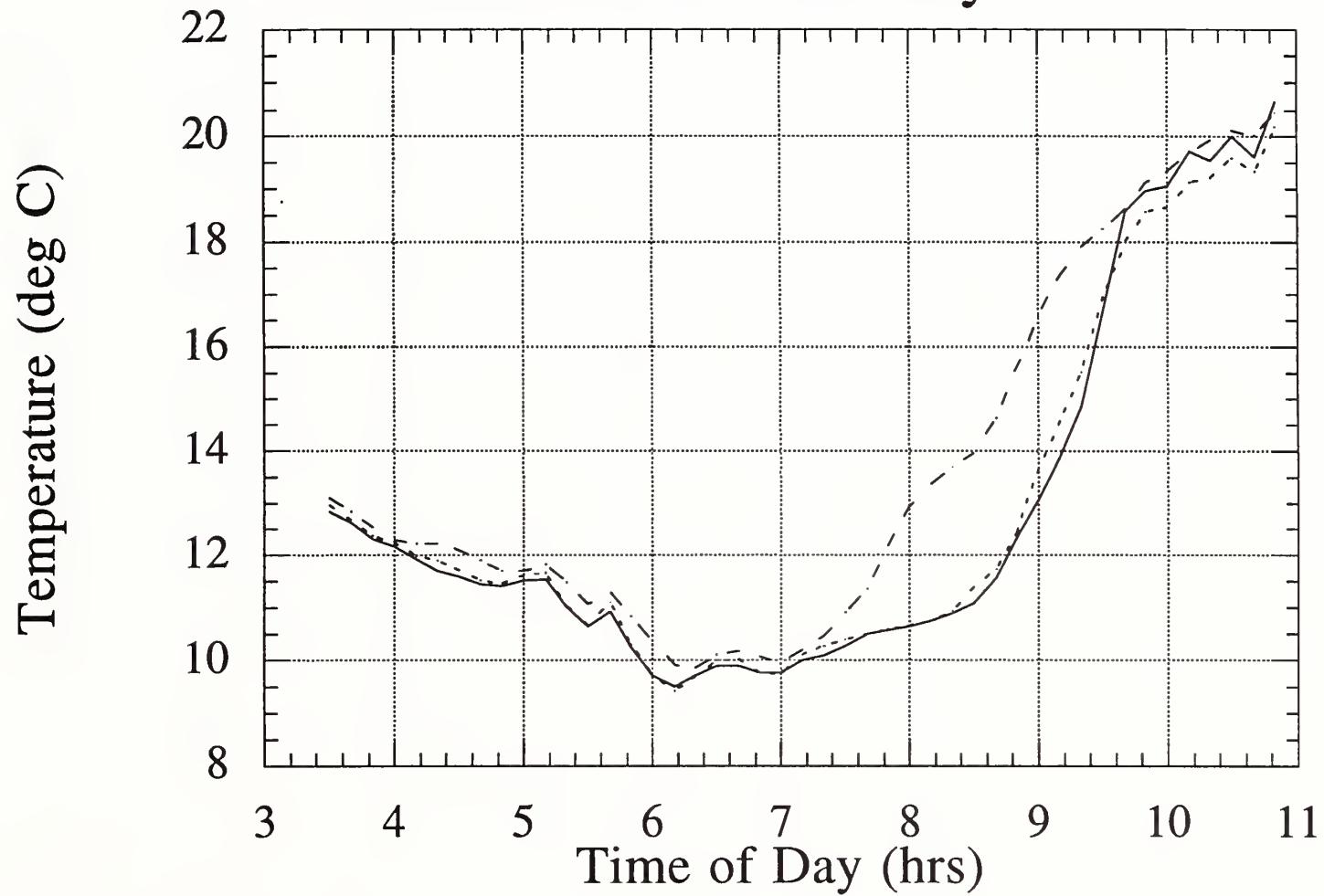


Azimuthal Standard Deviation (rad)

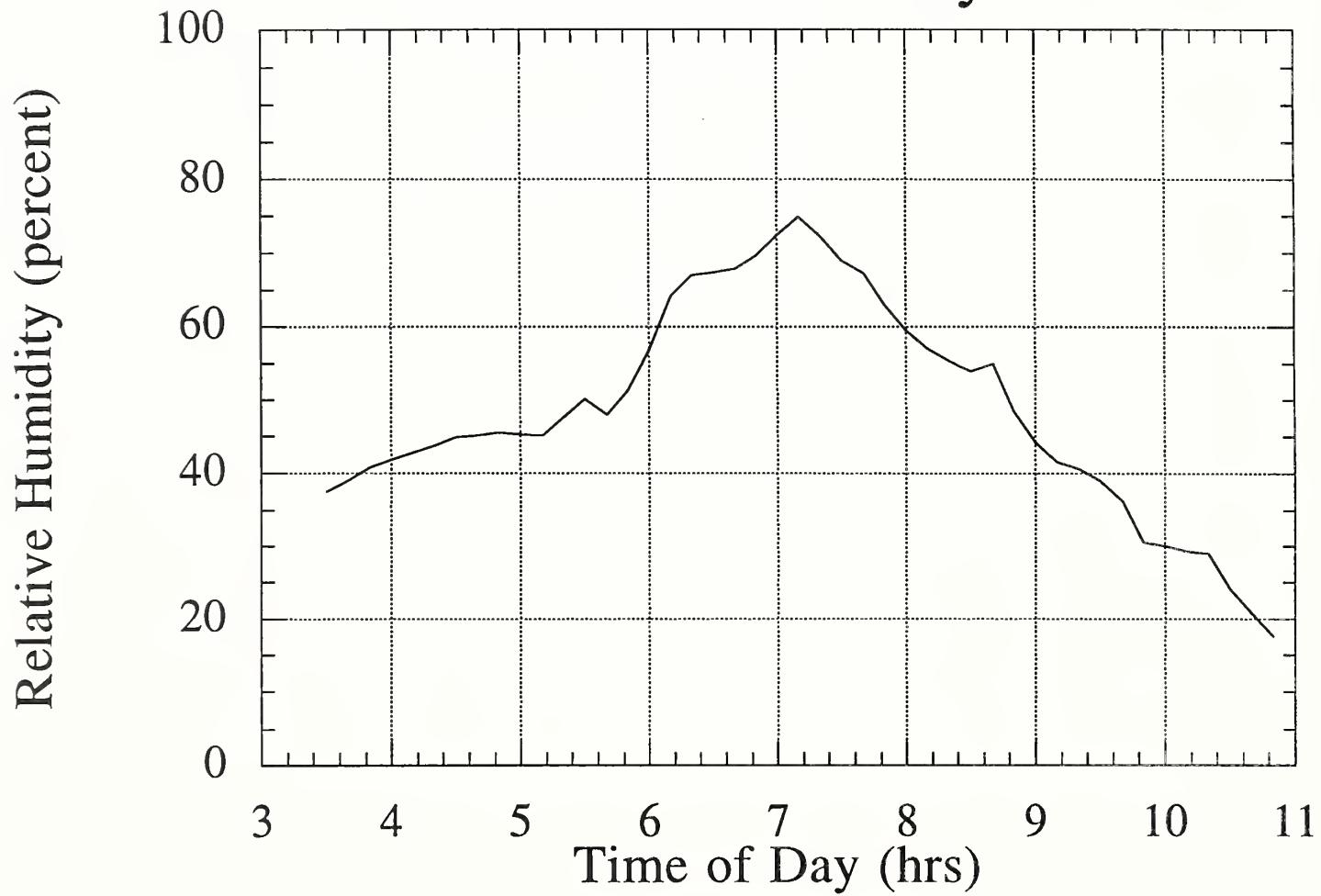
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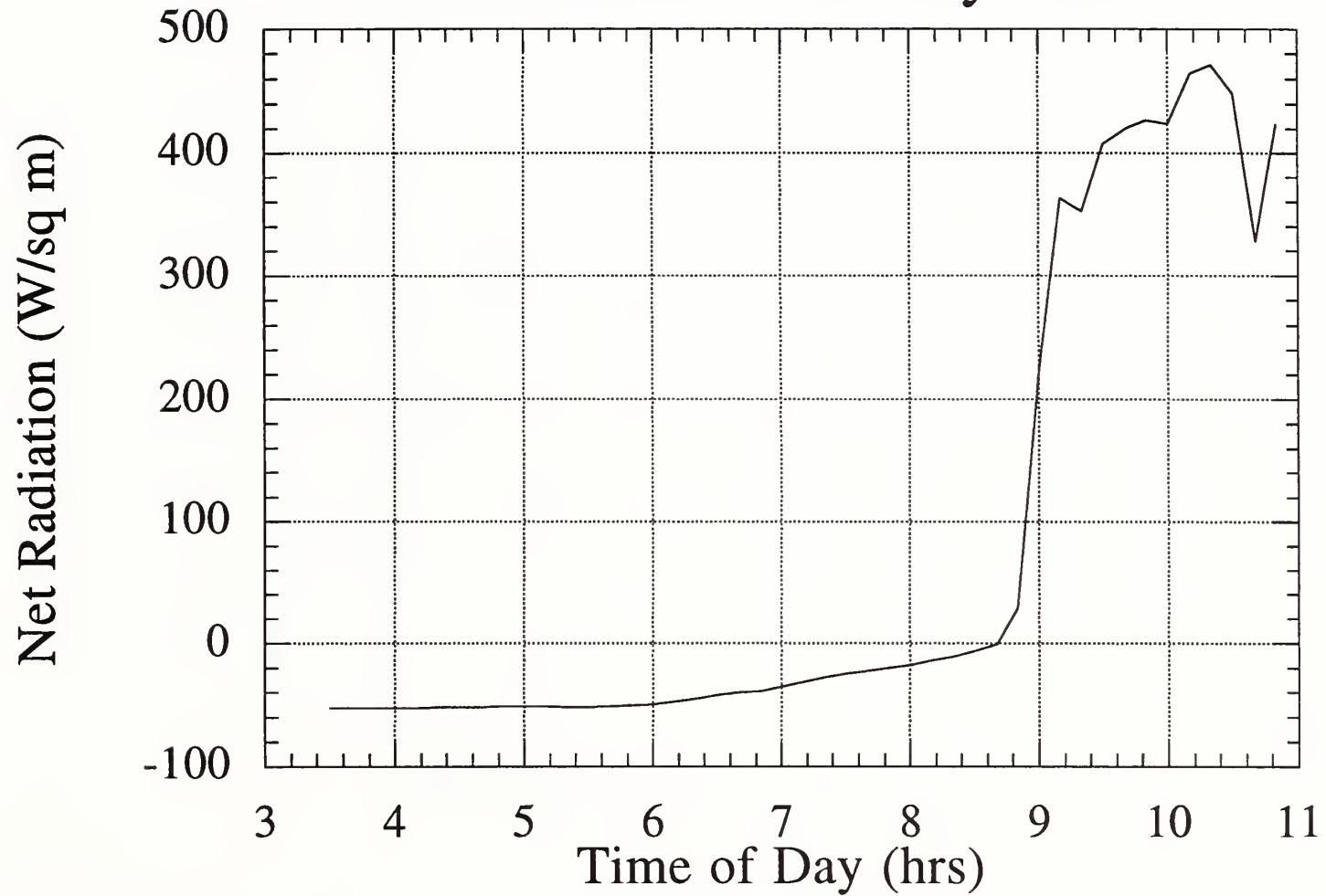
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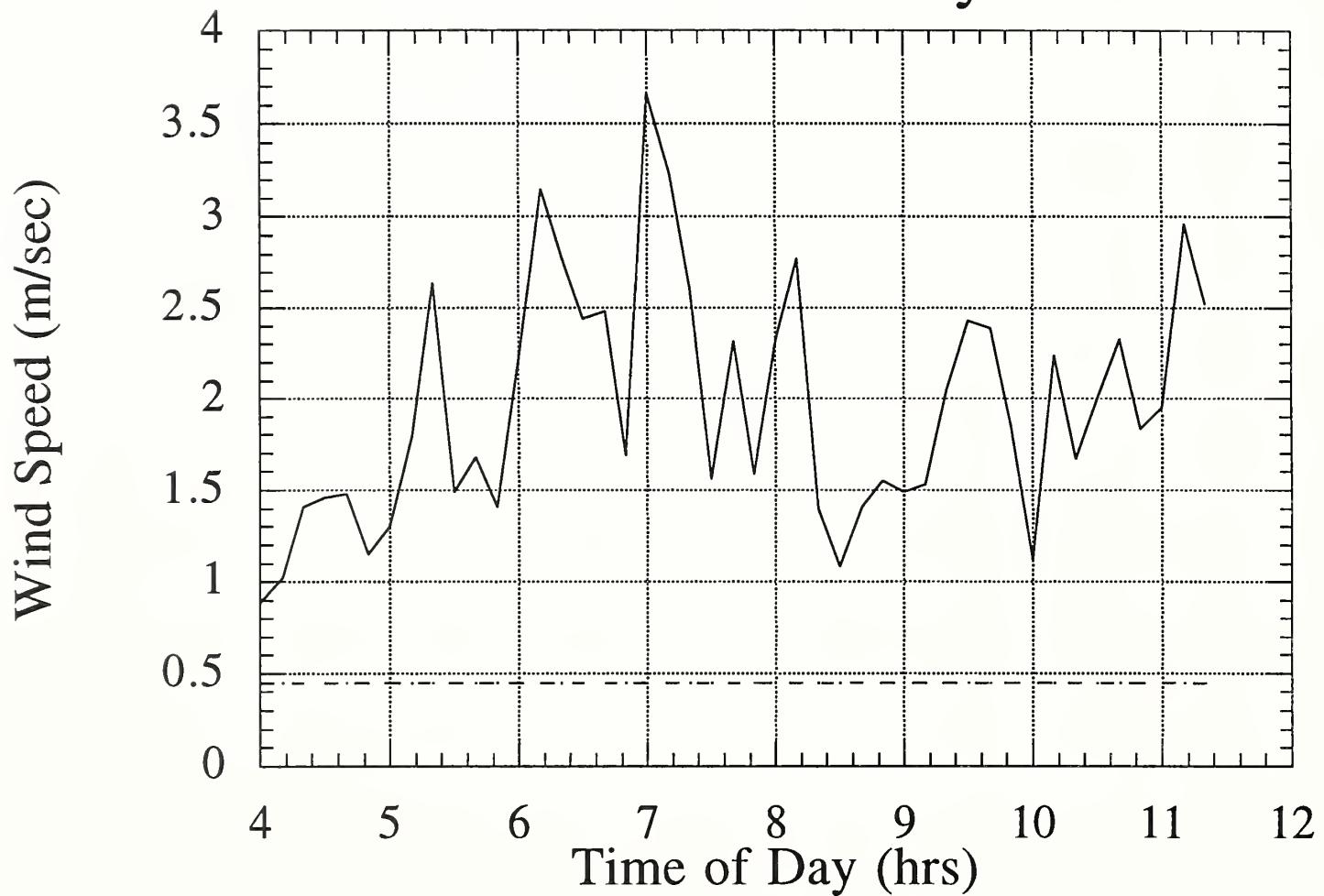
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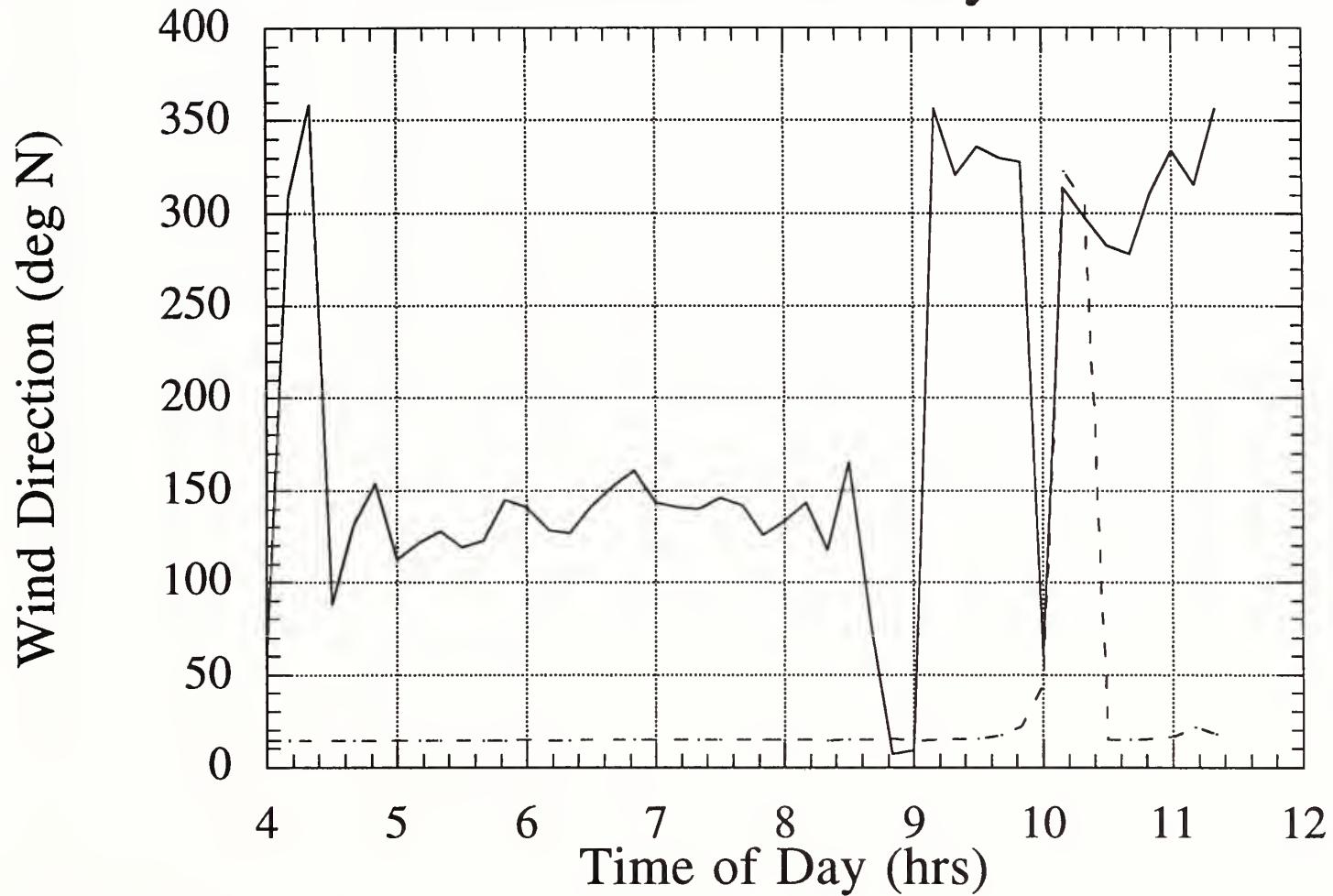
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## EMCOT #2: 28 May 1993

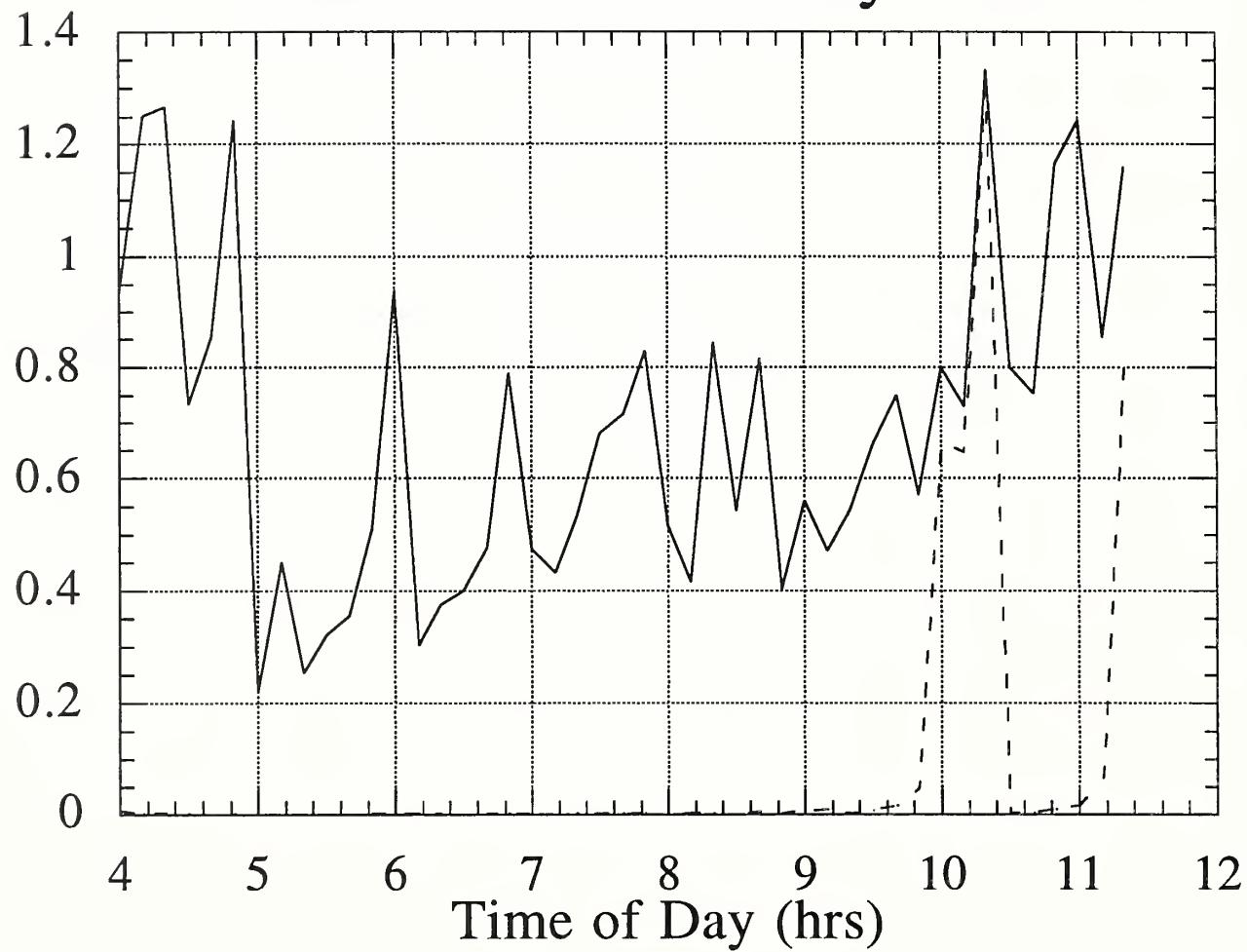


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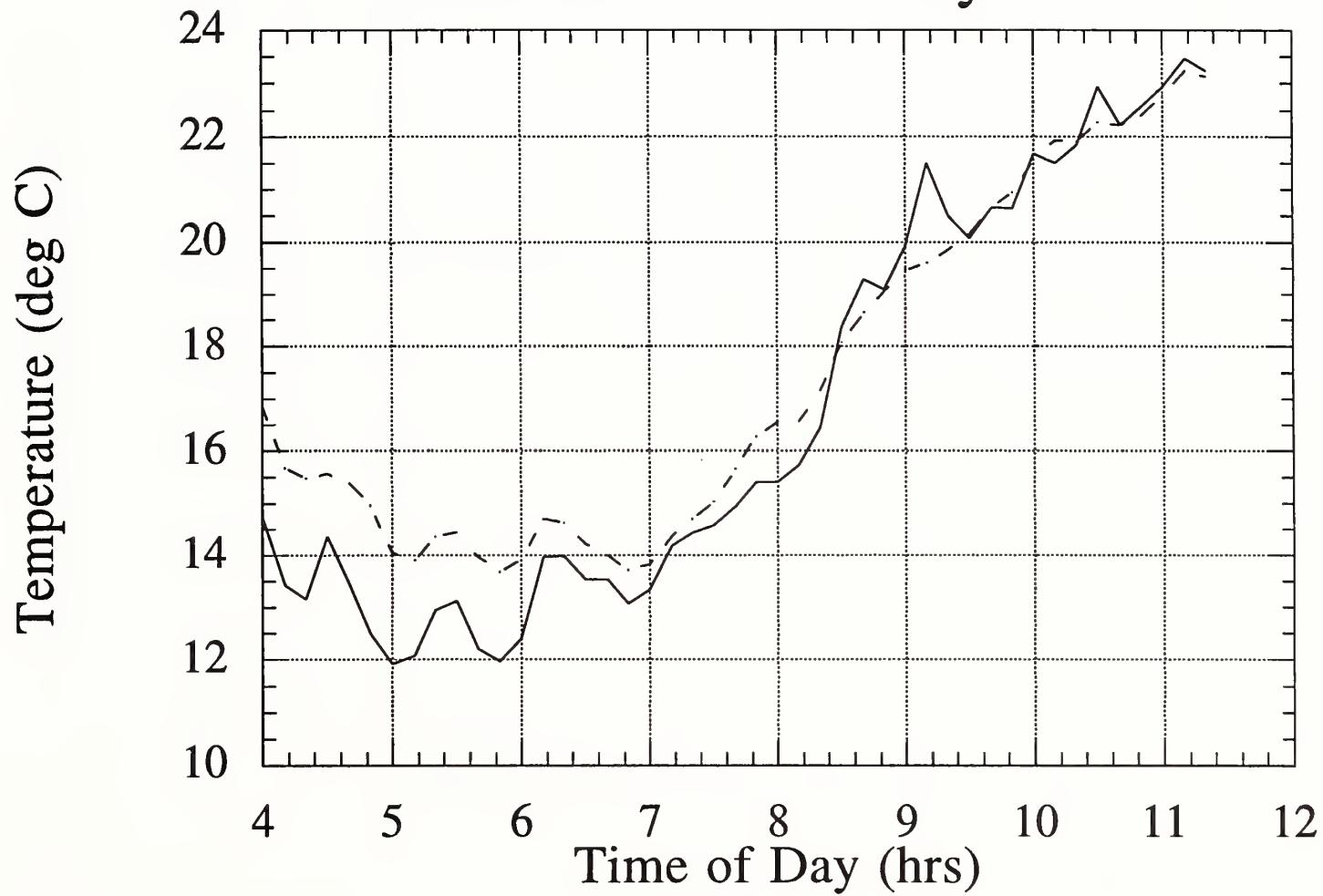


12  
Azimuthal Standard Deviation (rad)

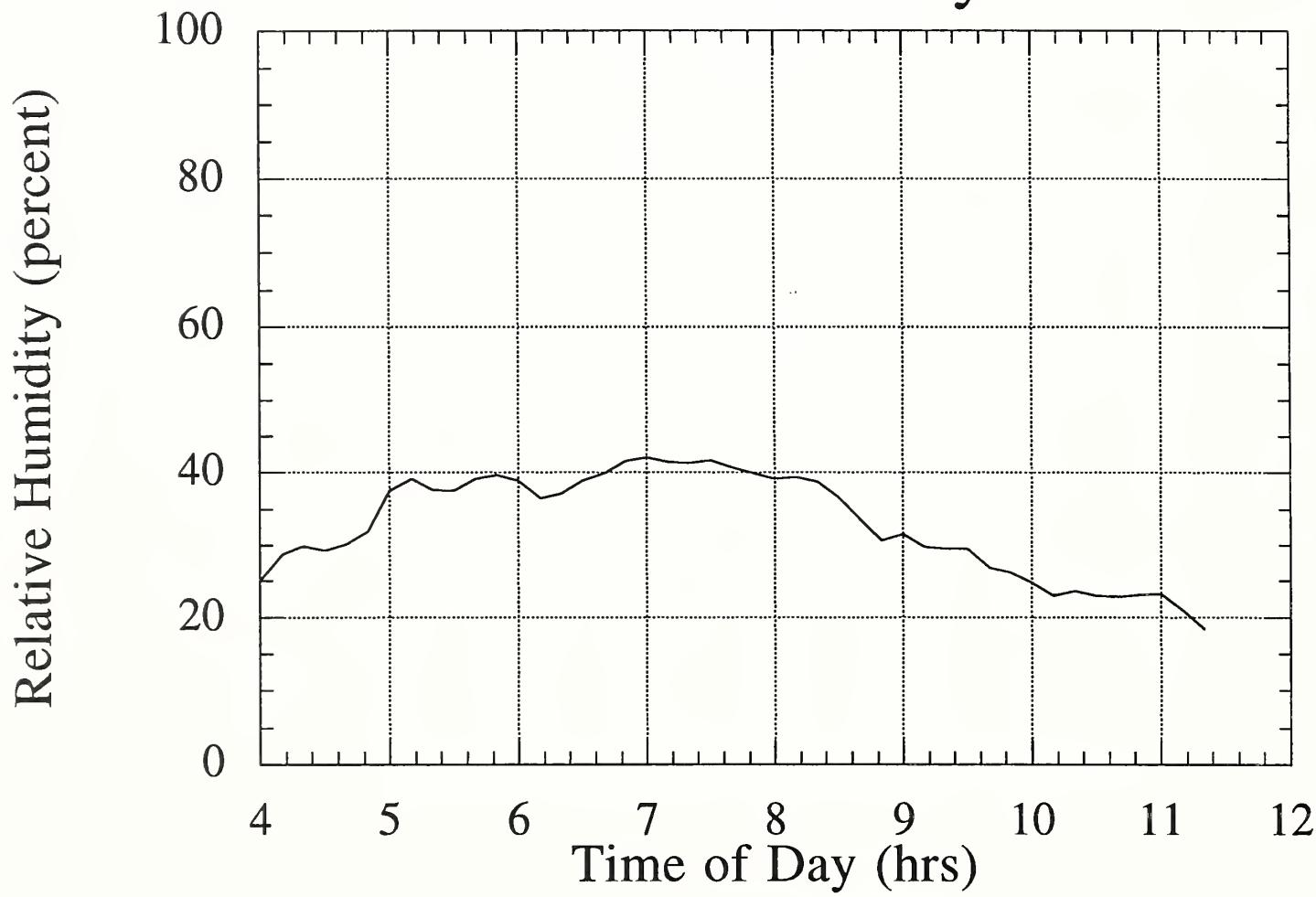
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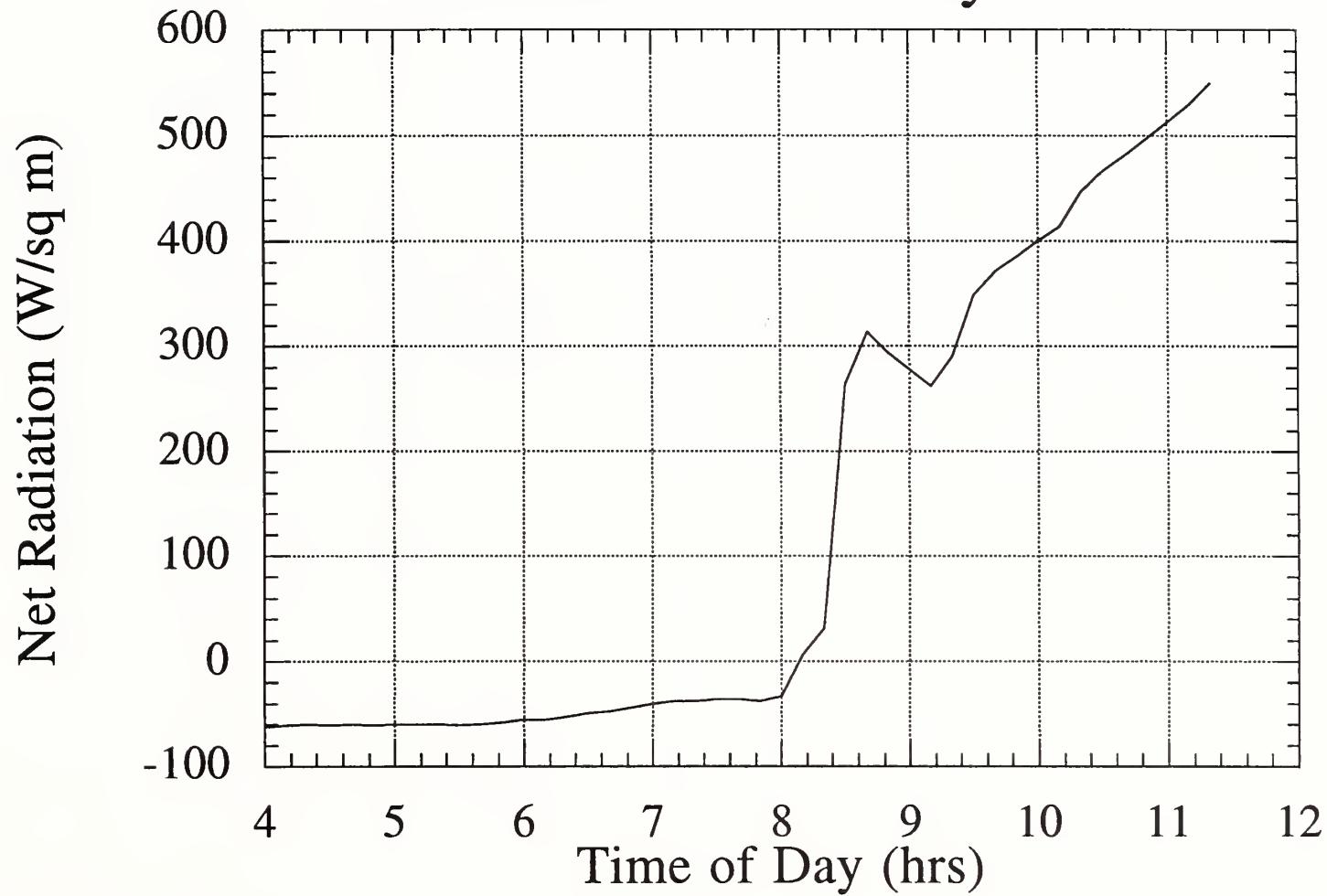
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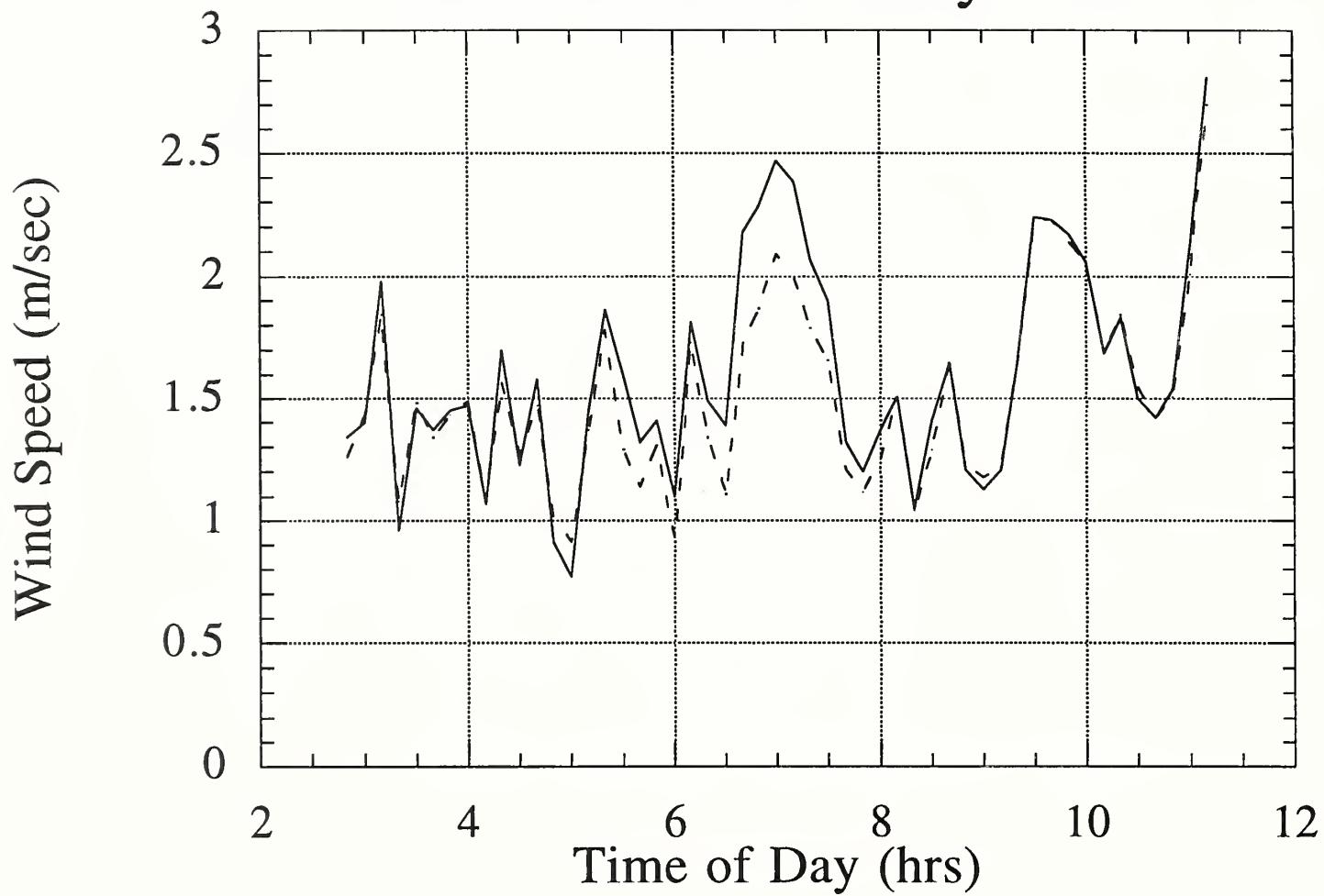
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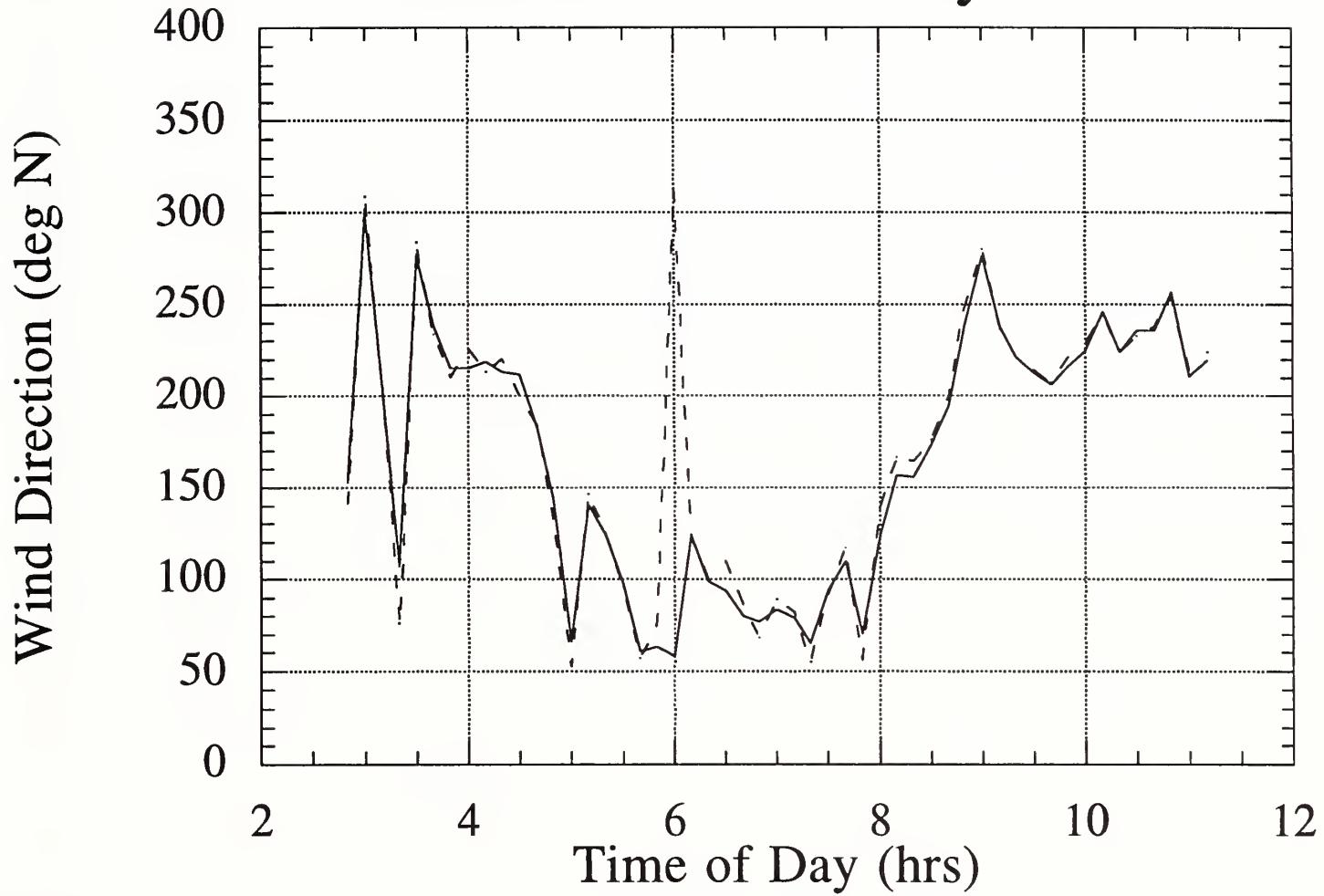
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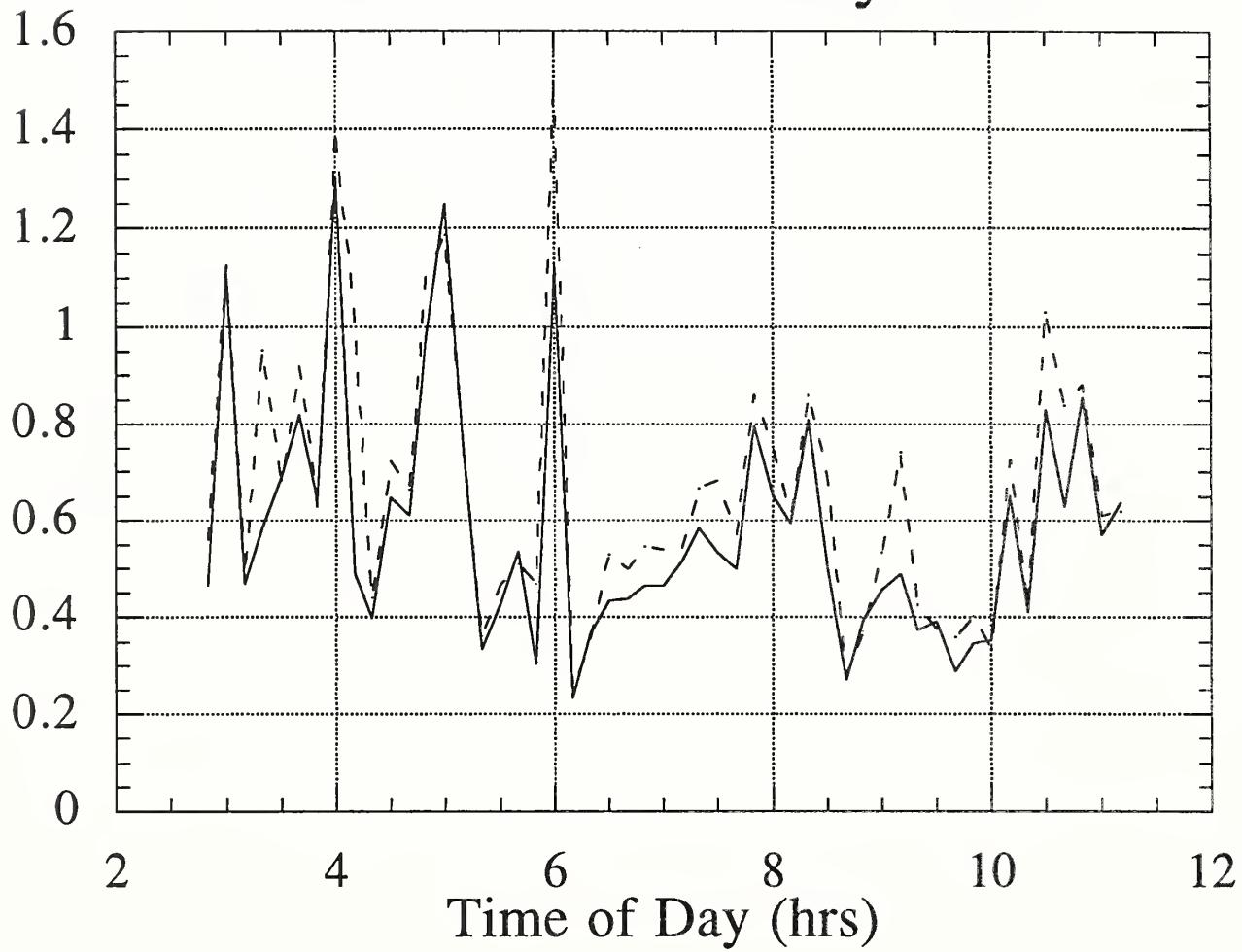


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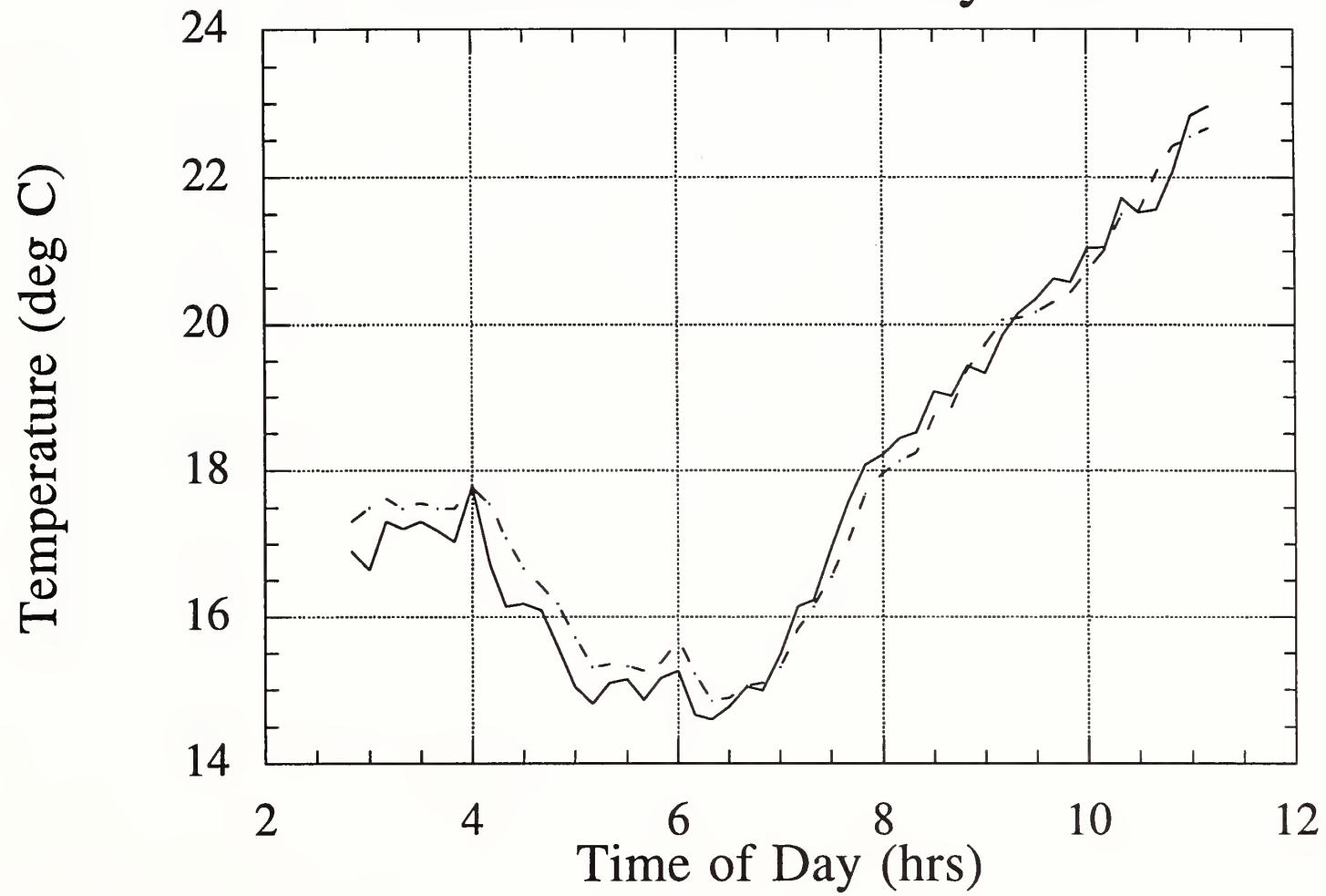


18  
Azimuthal Standard Deviation (rad)

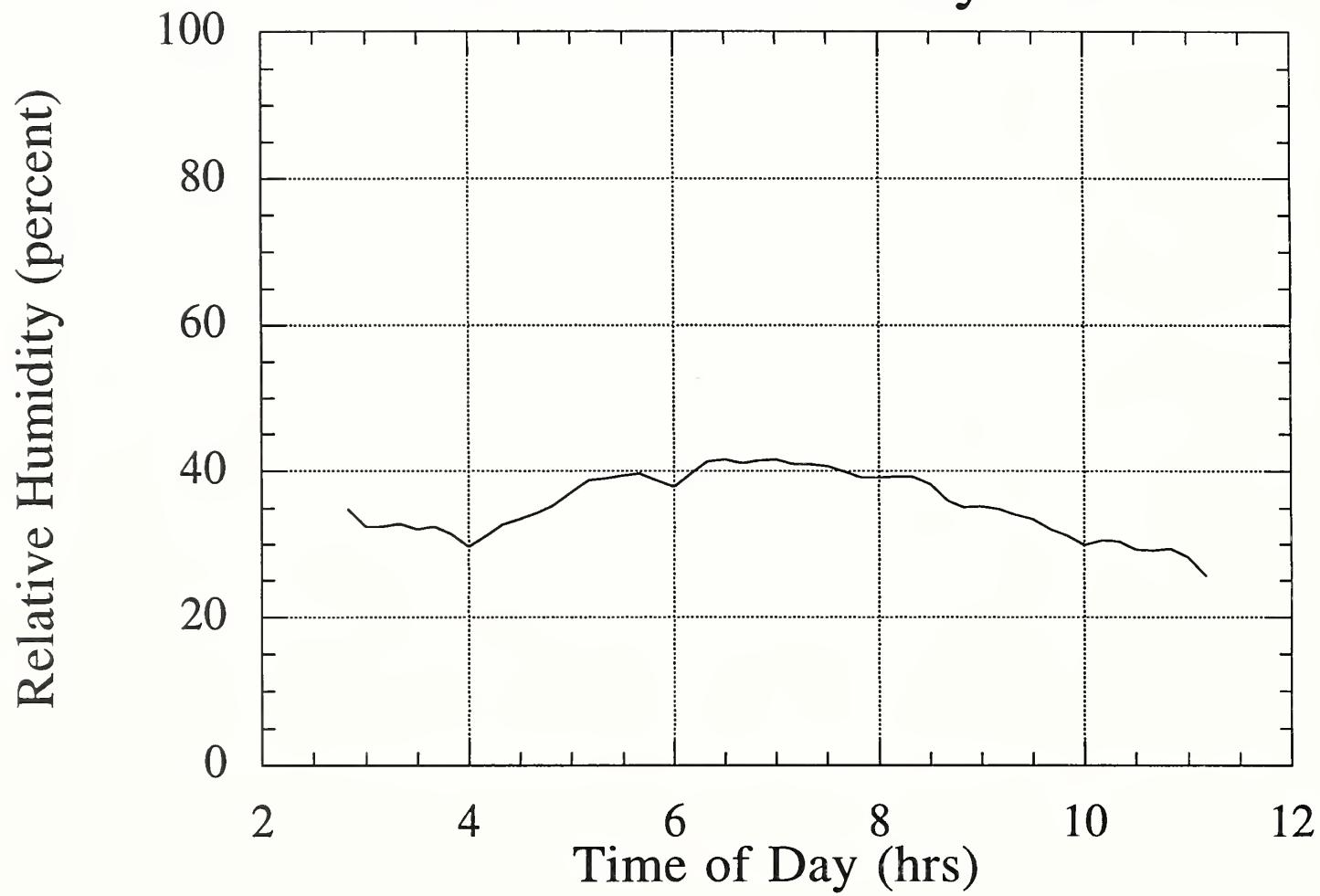
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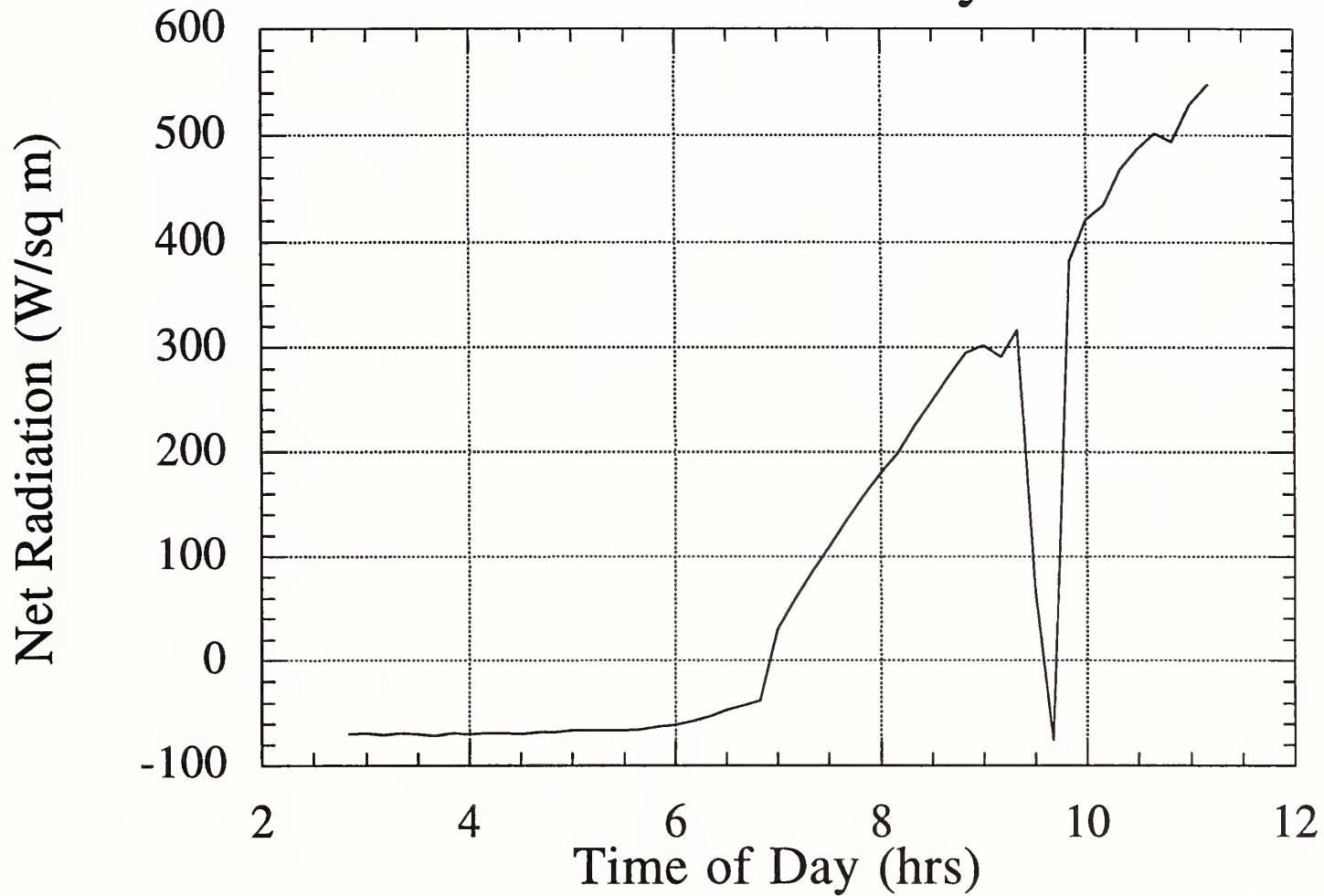
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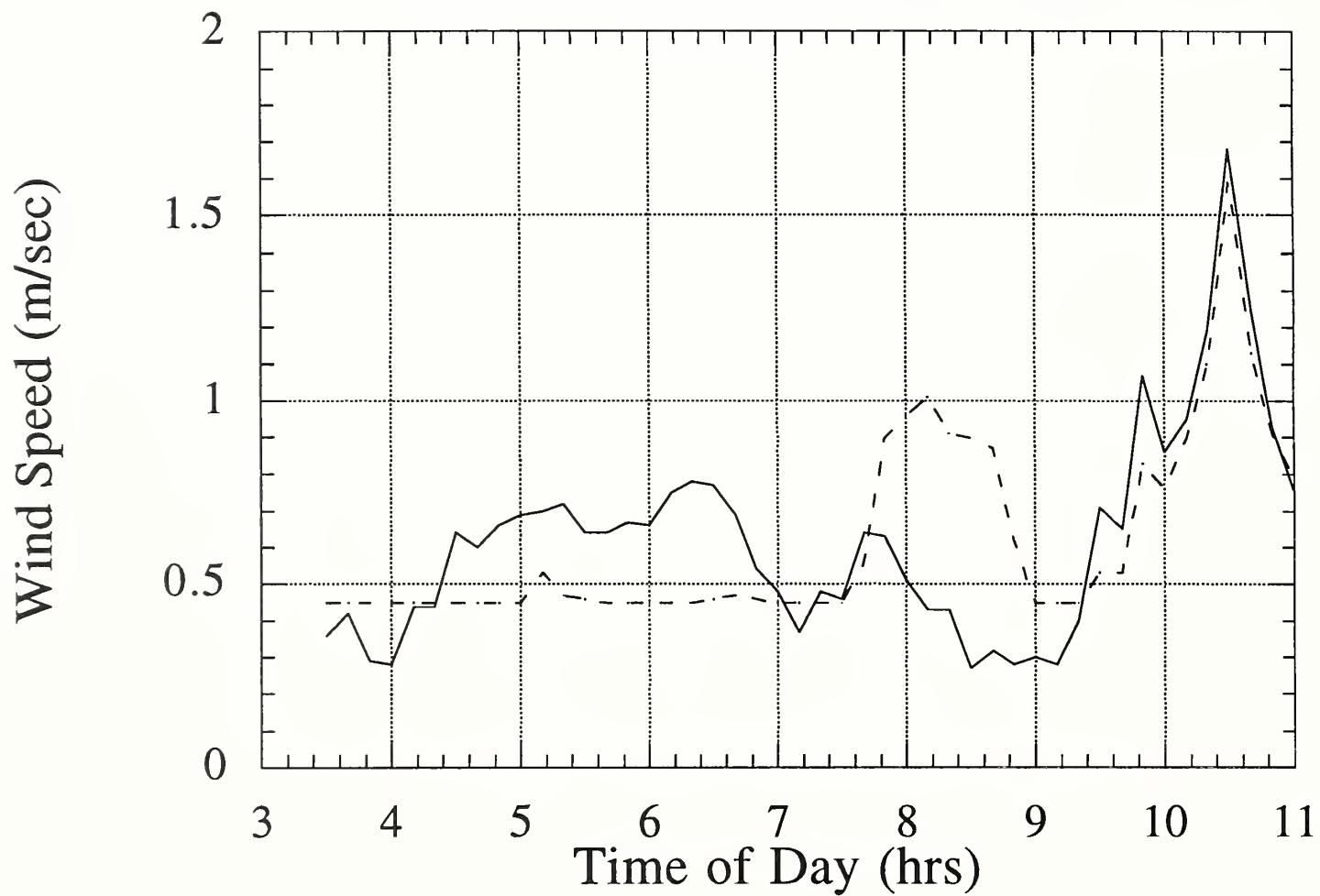
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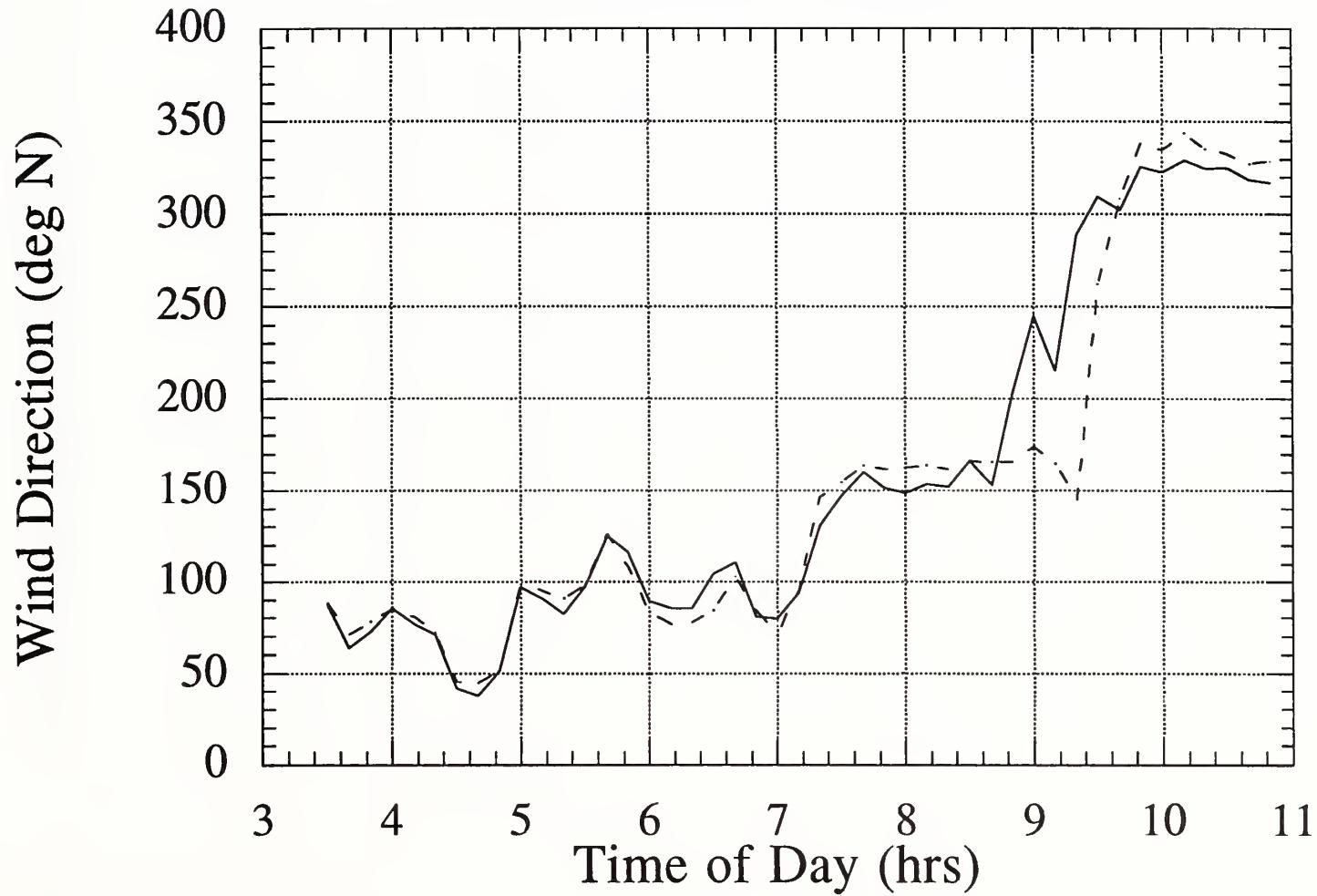
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# EMCOT #1: 4 June 1993

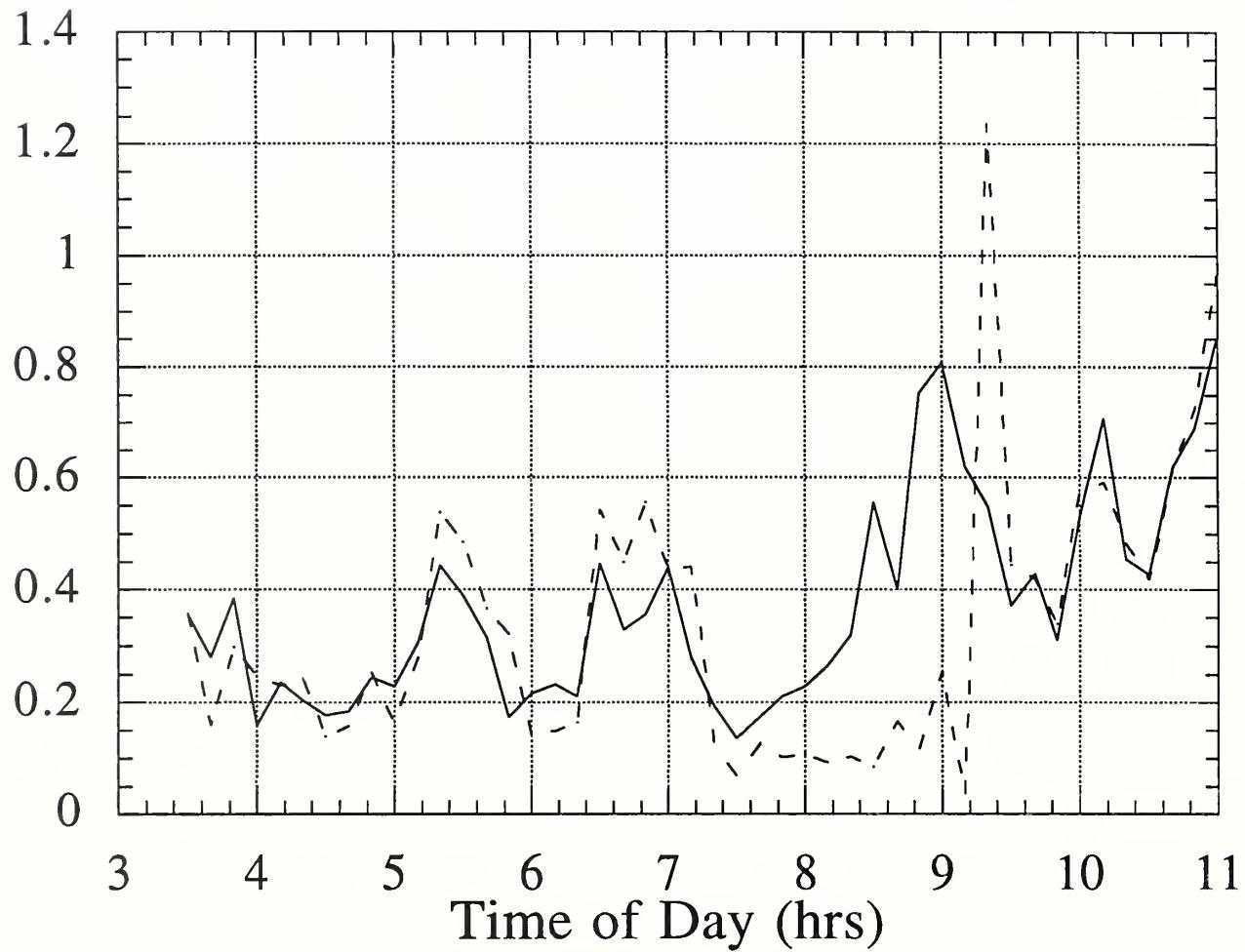


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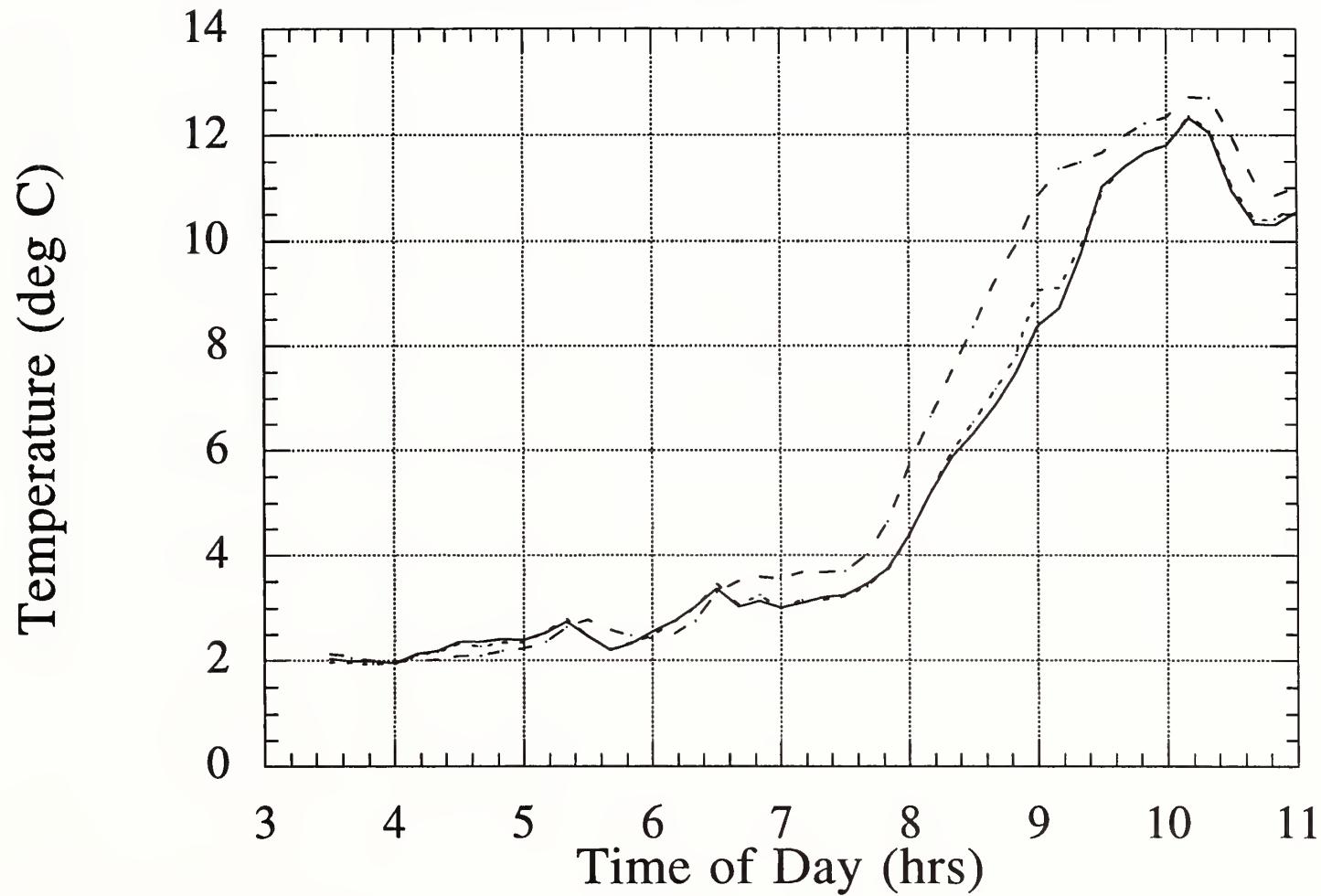


Azimuthal Standard Deviation (rad)

EMCOT #1: 4 June 1993

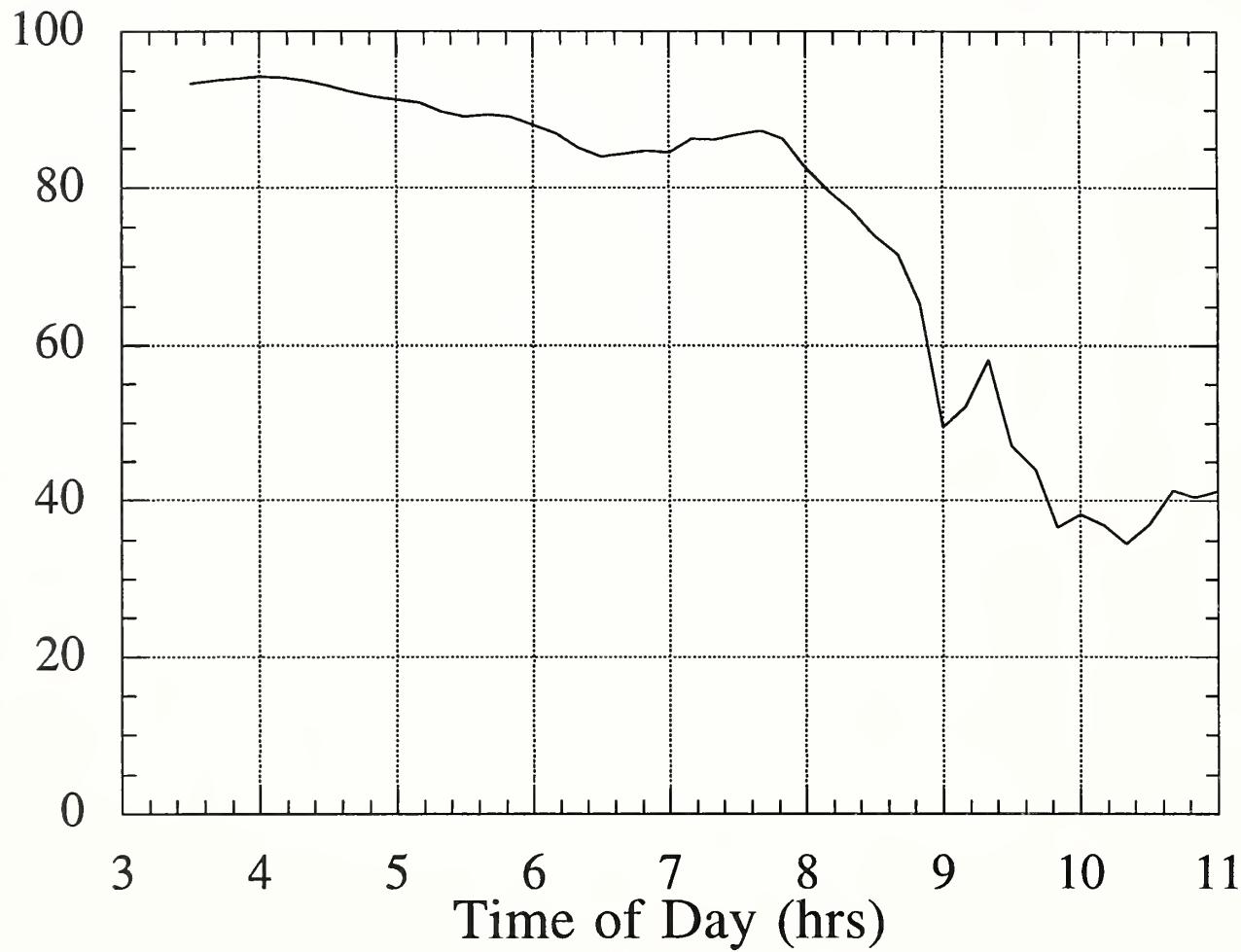


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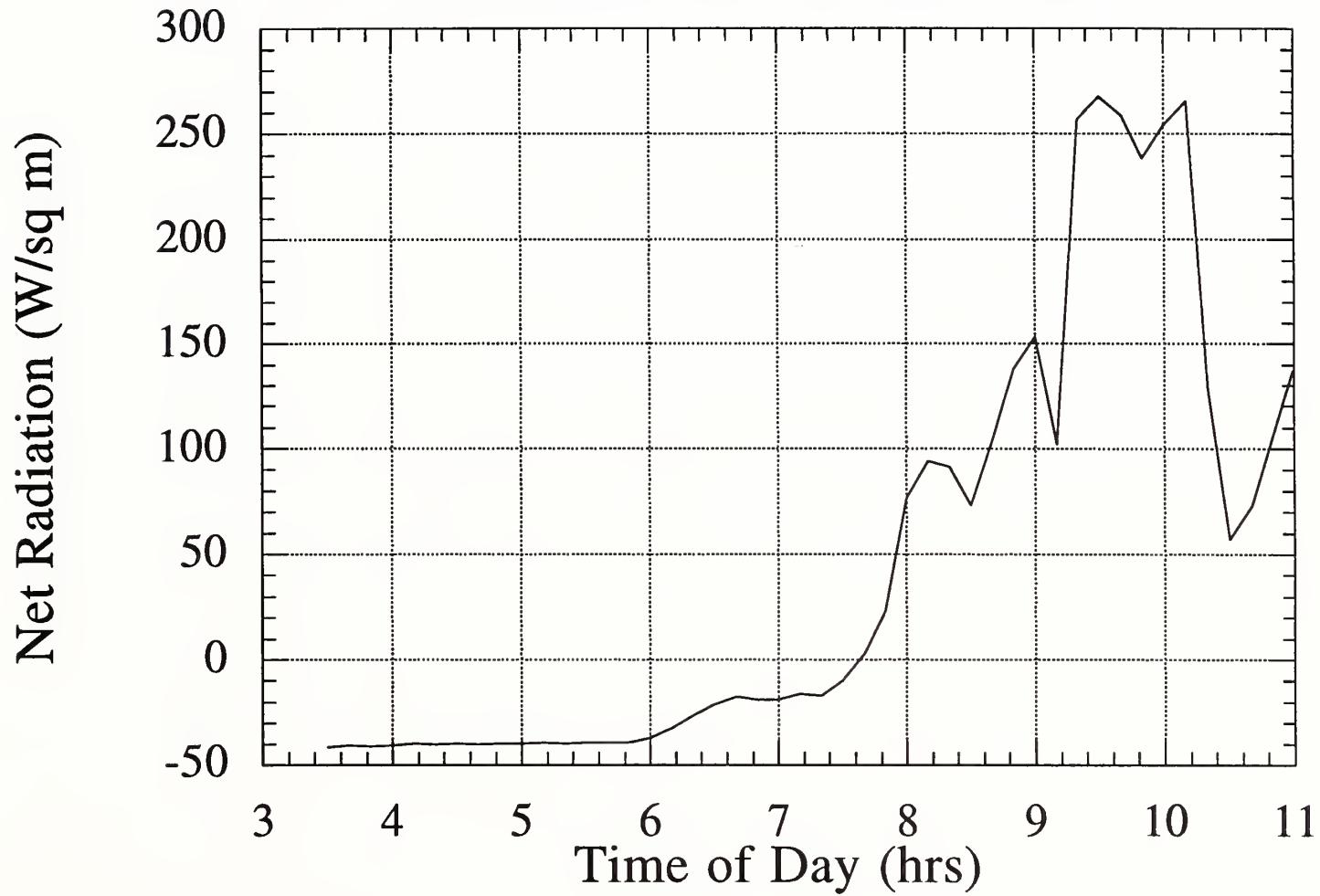


26  
Relative Humidity (percent)

## EMCOT #1: 4 June 1993

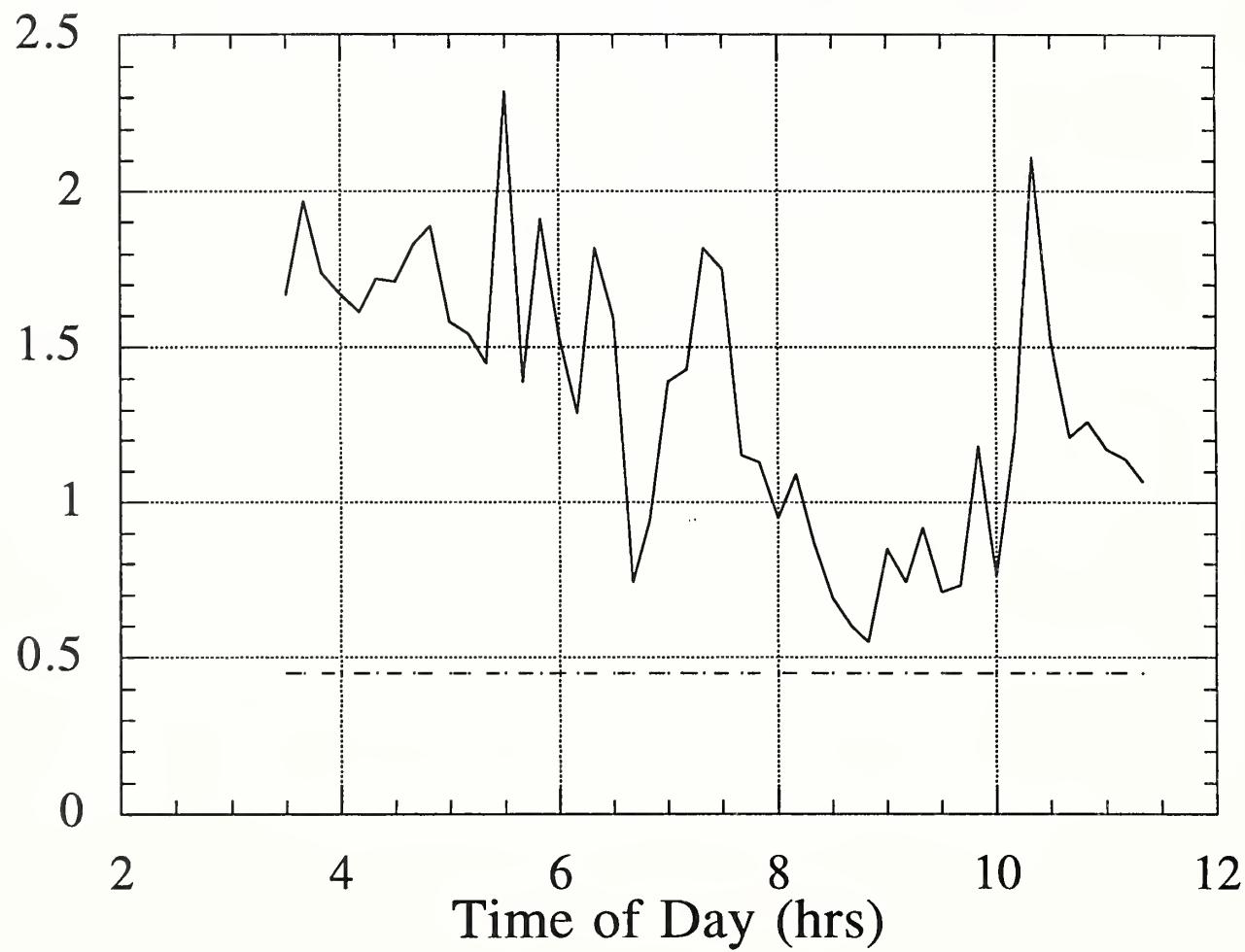


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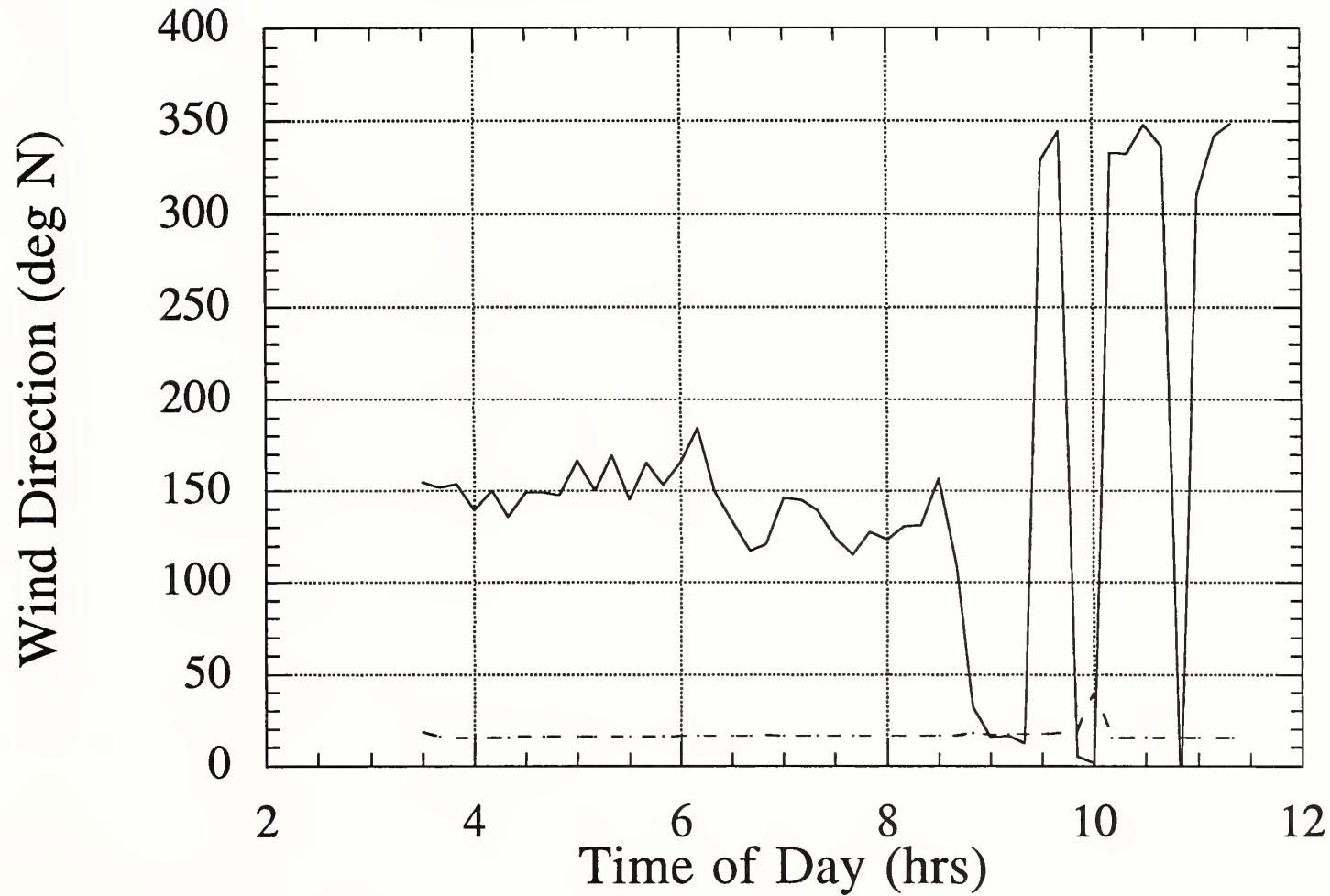


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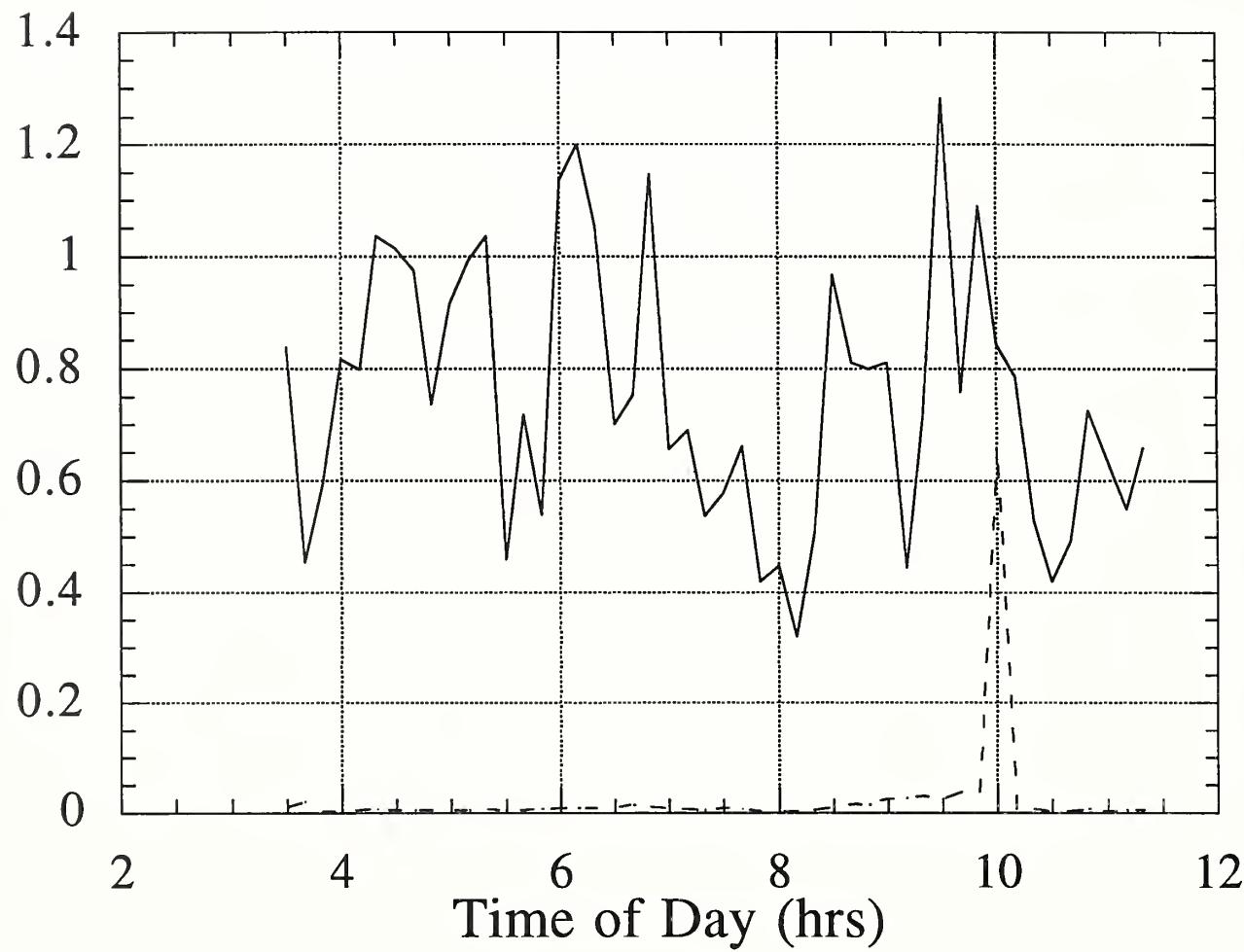


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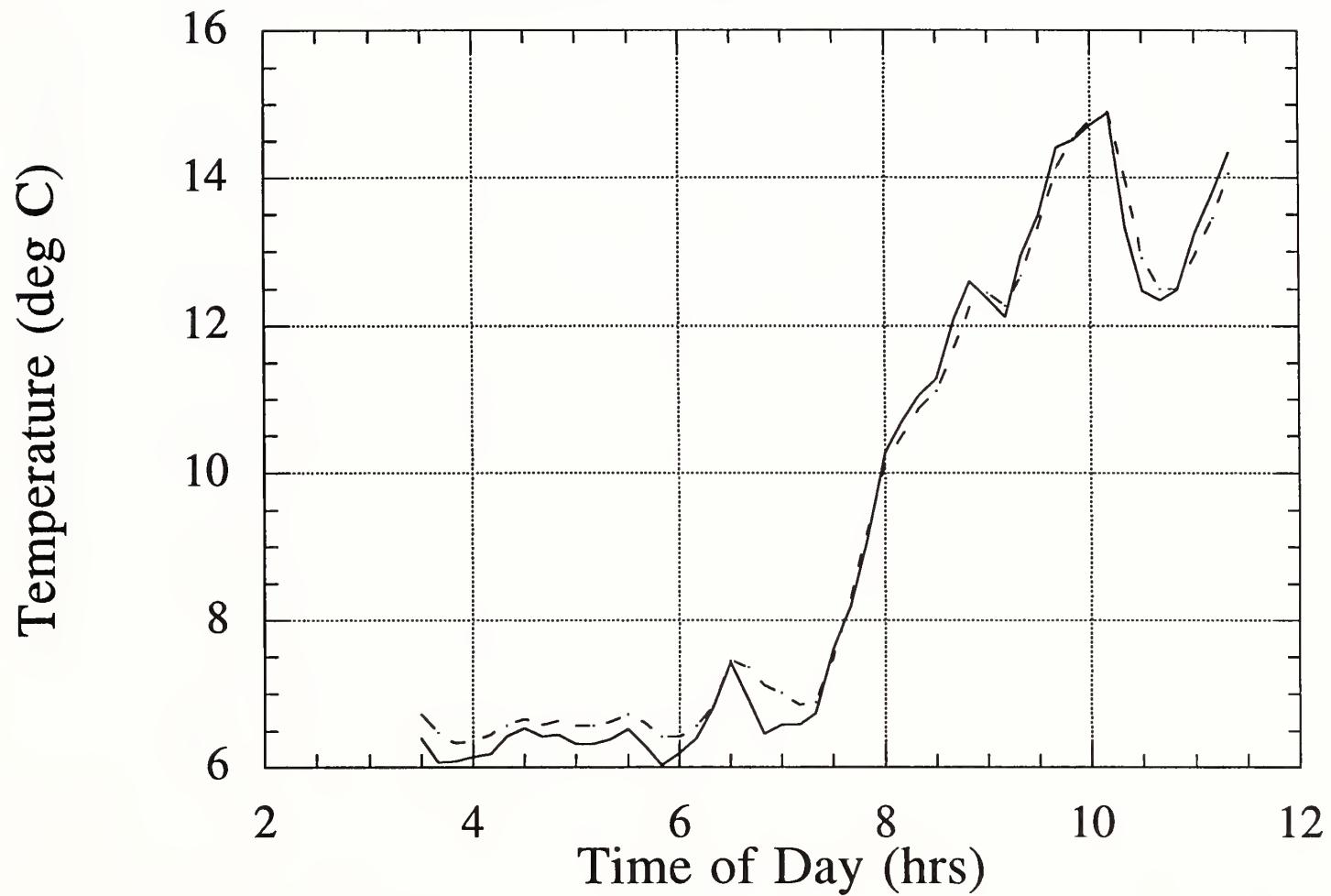


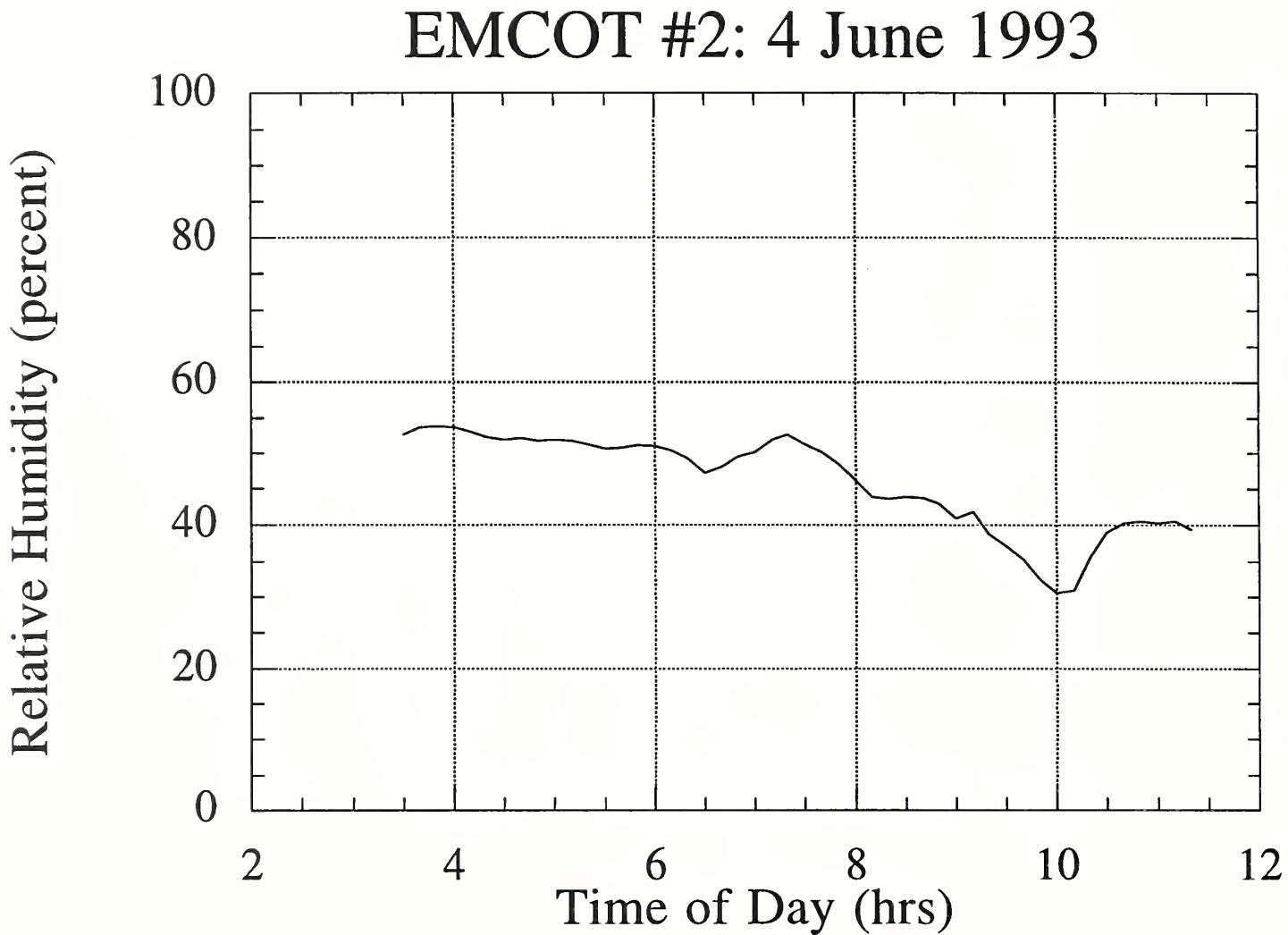
30  
Azimuthal Standard Deviation (rad)

EMCOT #2: 4 June 1993

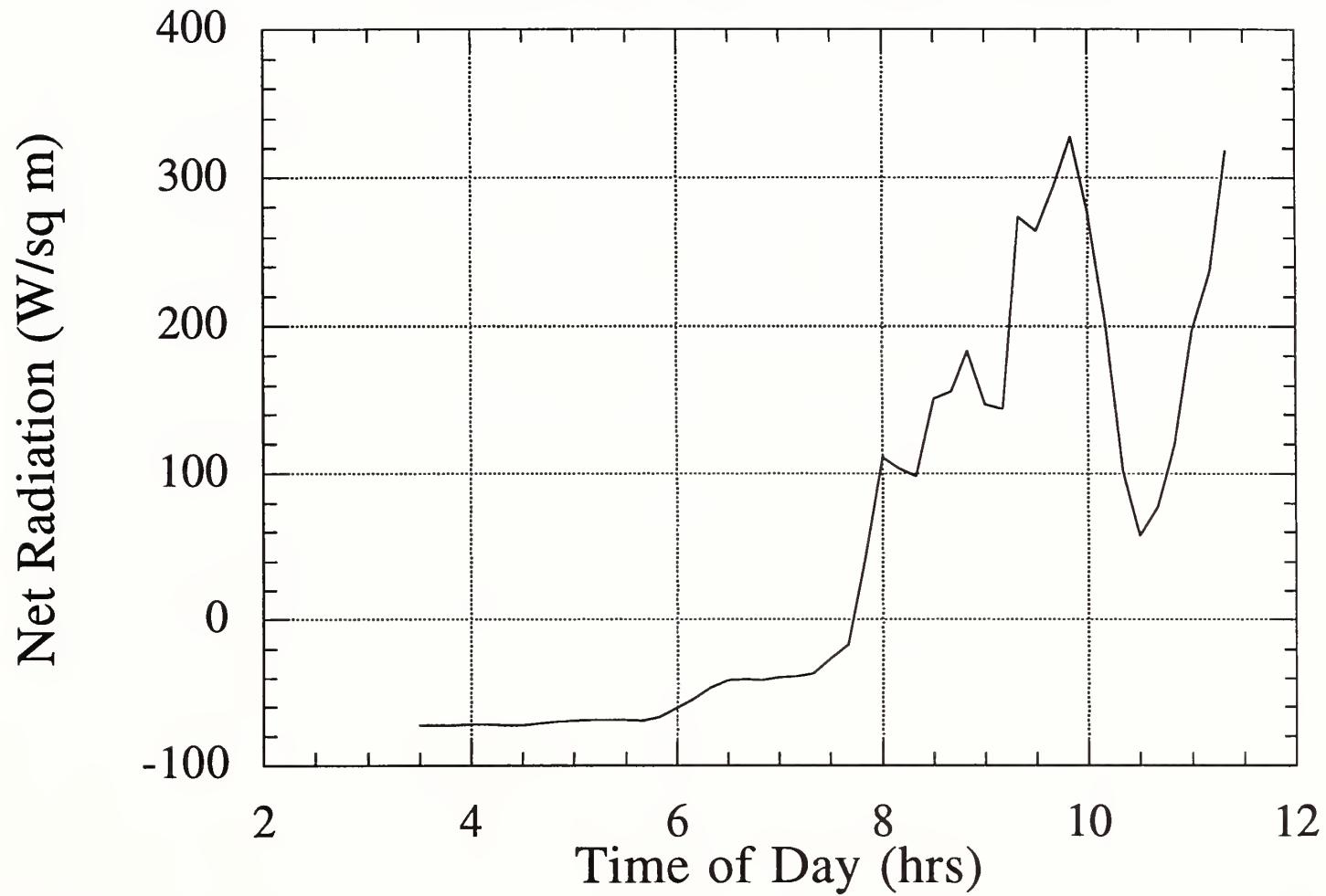


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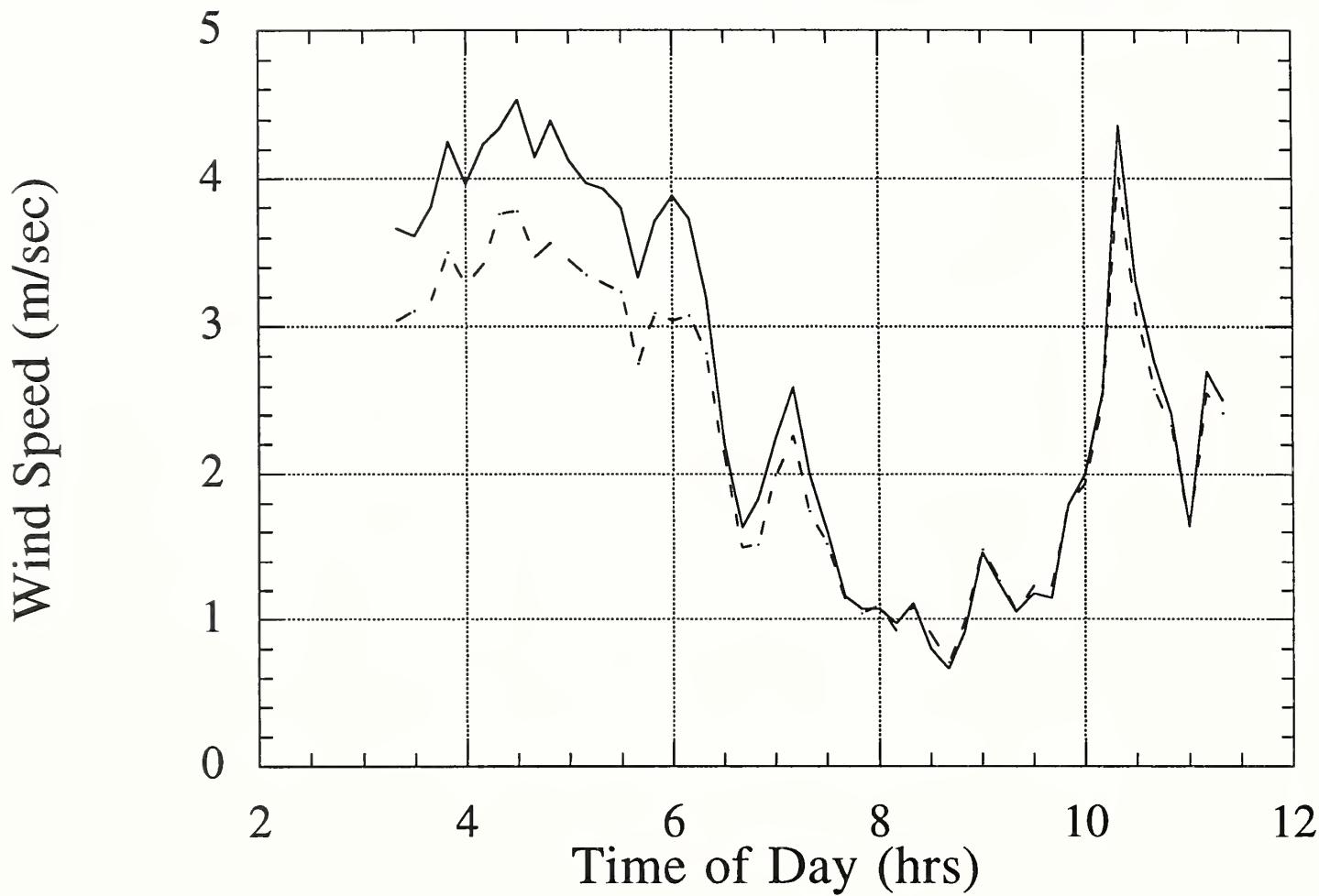




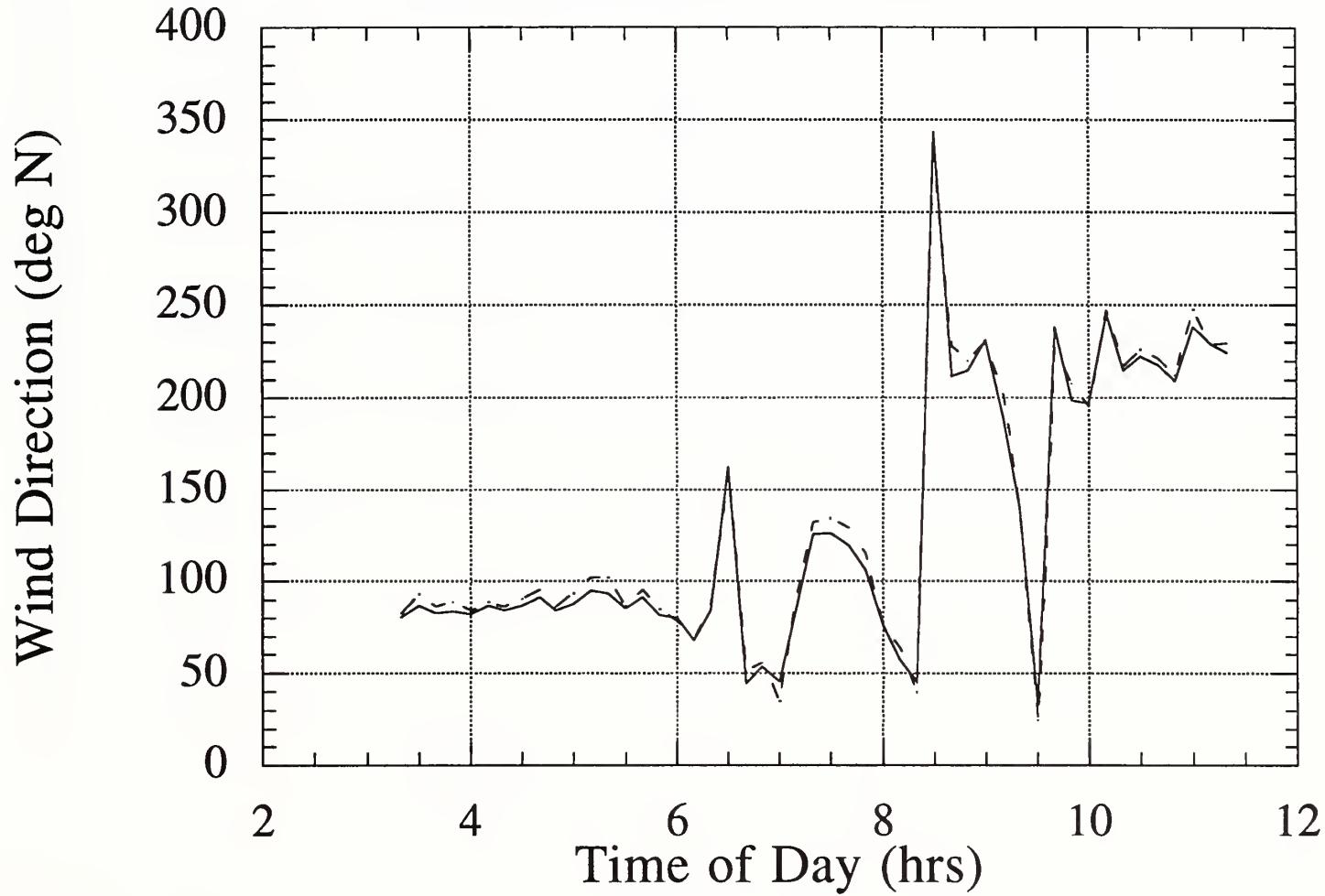
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## EMCOT #3: 4 June 1993

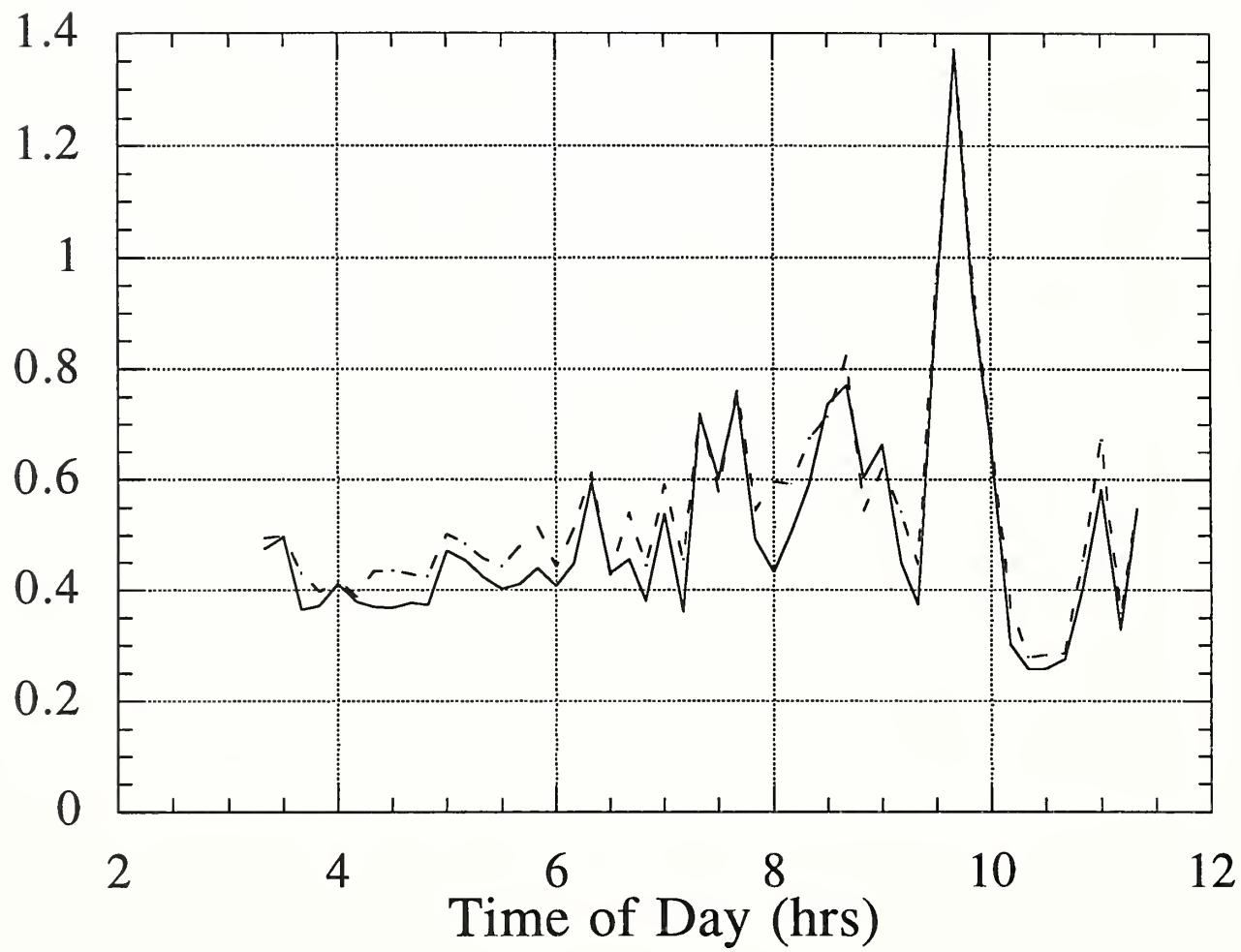


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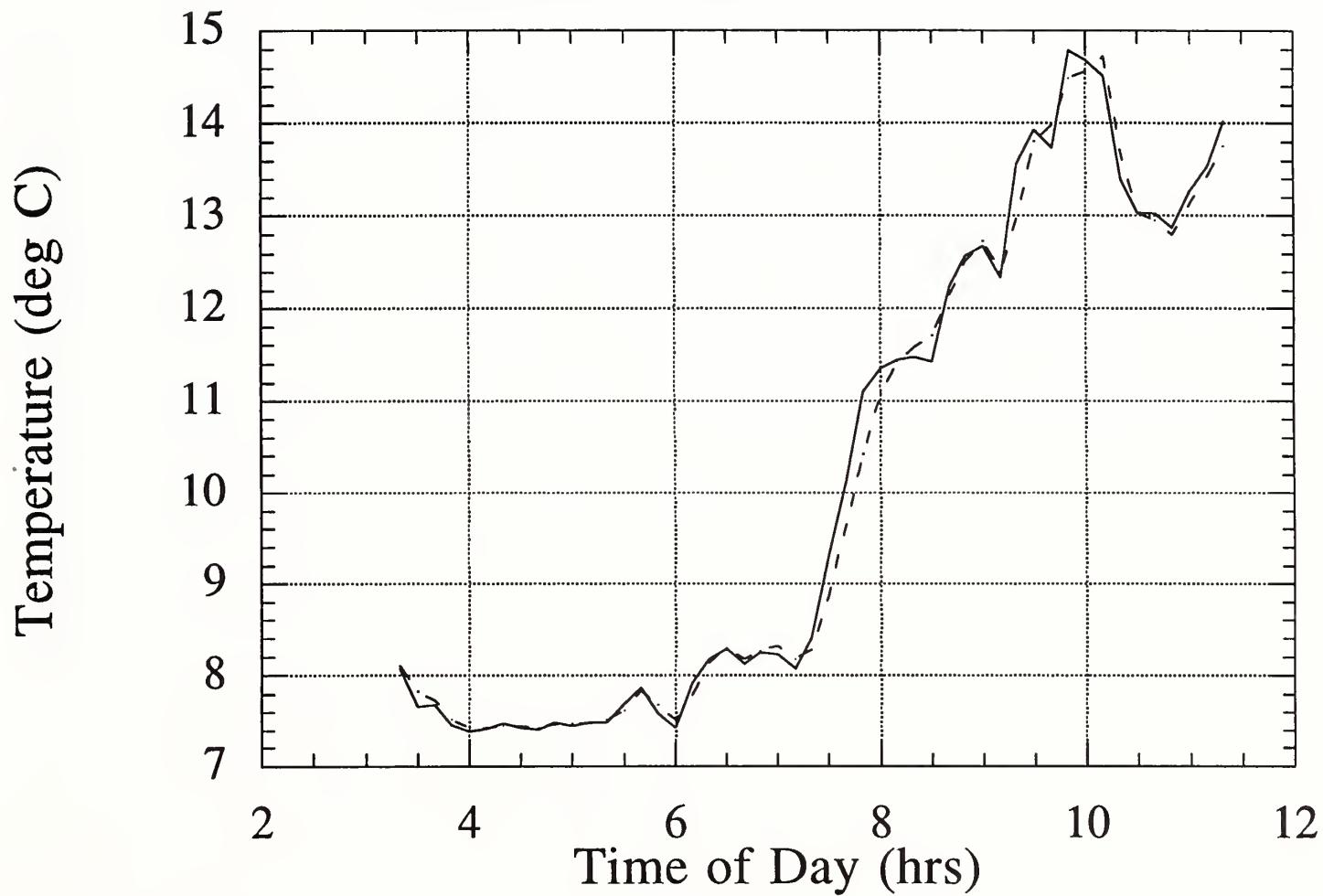


9c Azimuthal Standard Deviation (rad)

EMCOT #3: 4 June 1993

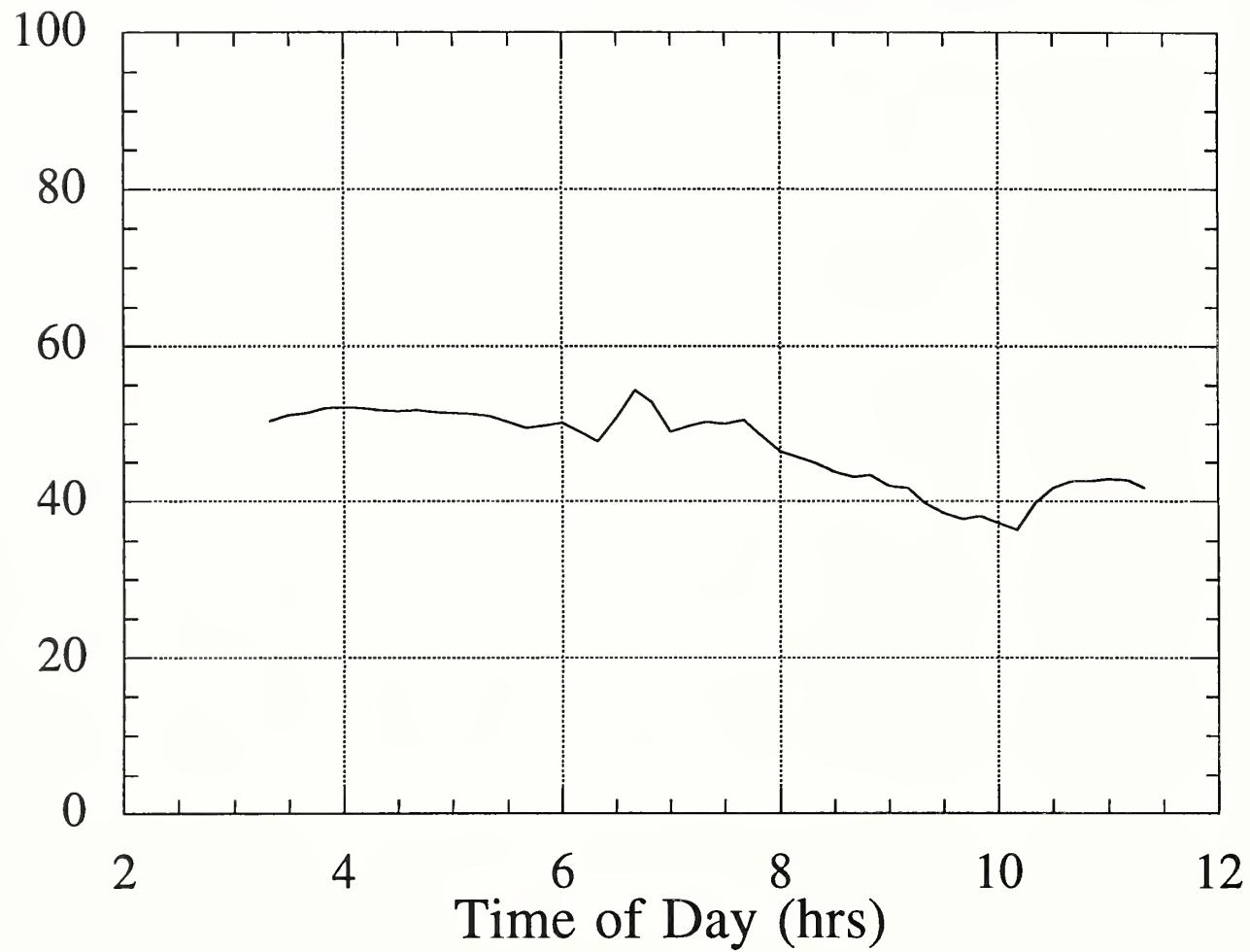


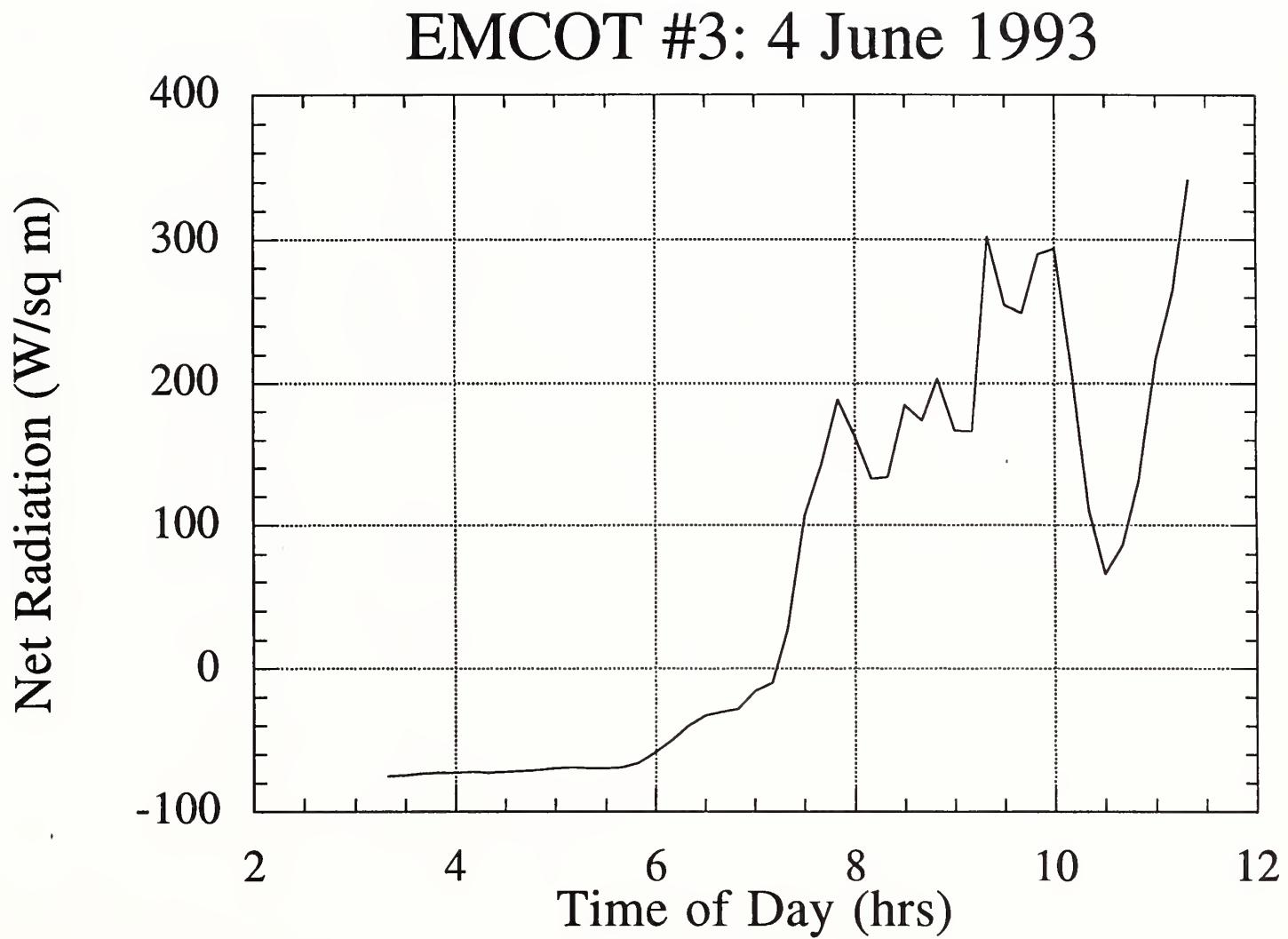
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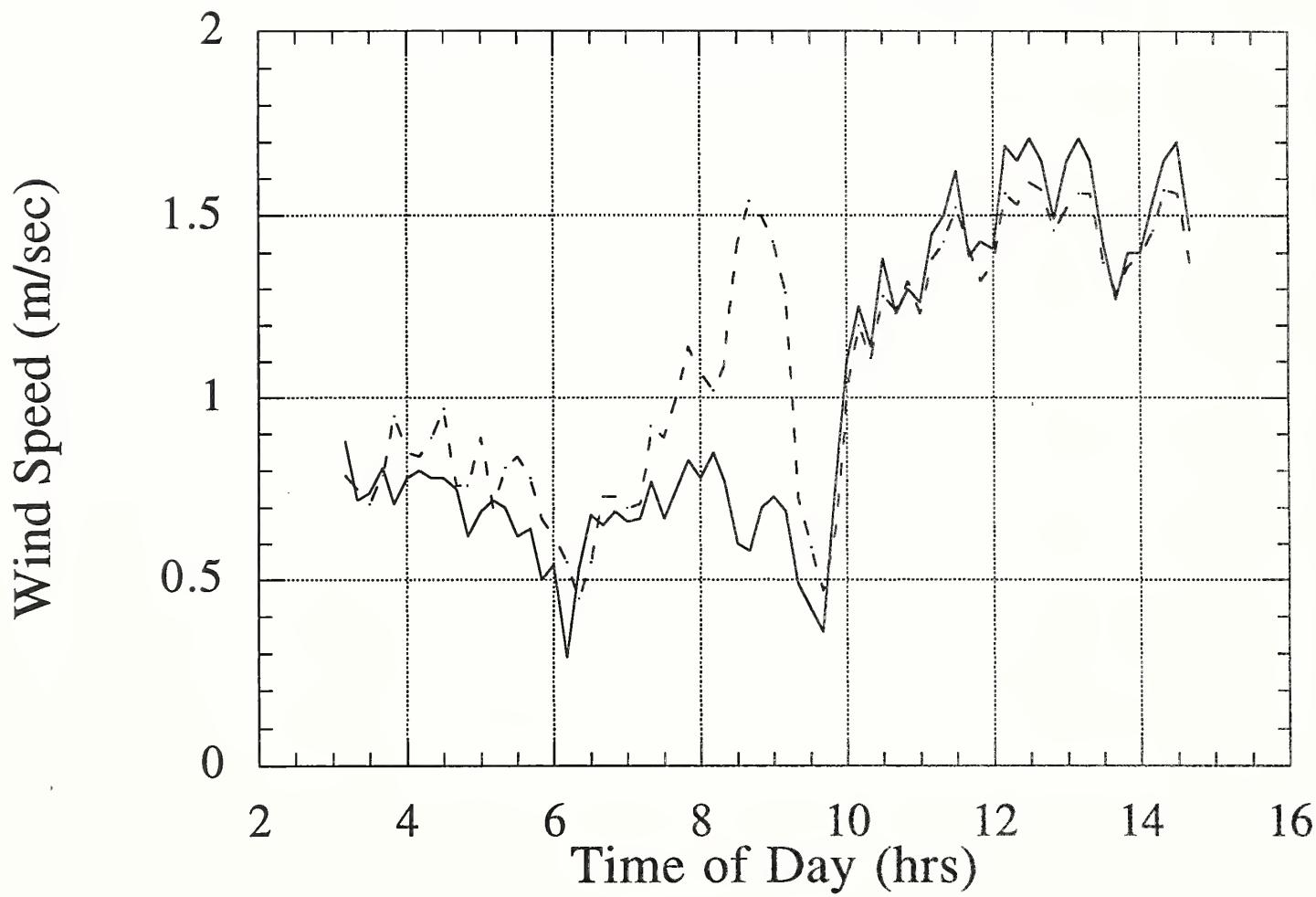
8C  
Relative Humidity (percent)

EMCOT #3: 4 June 1993

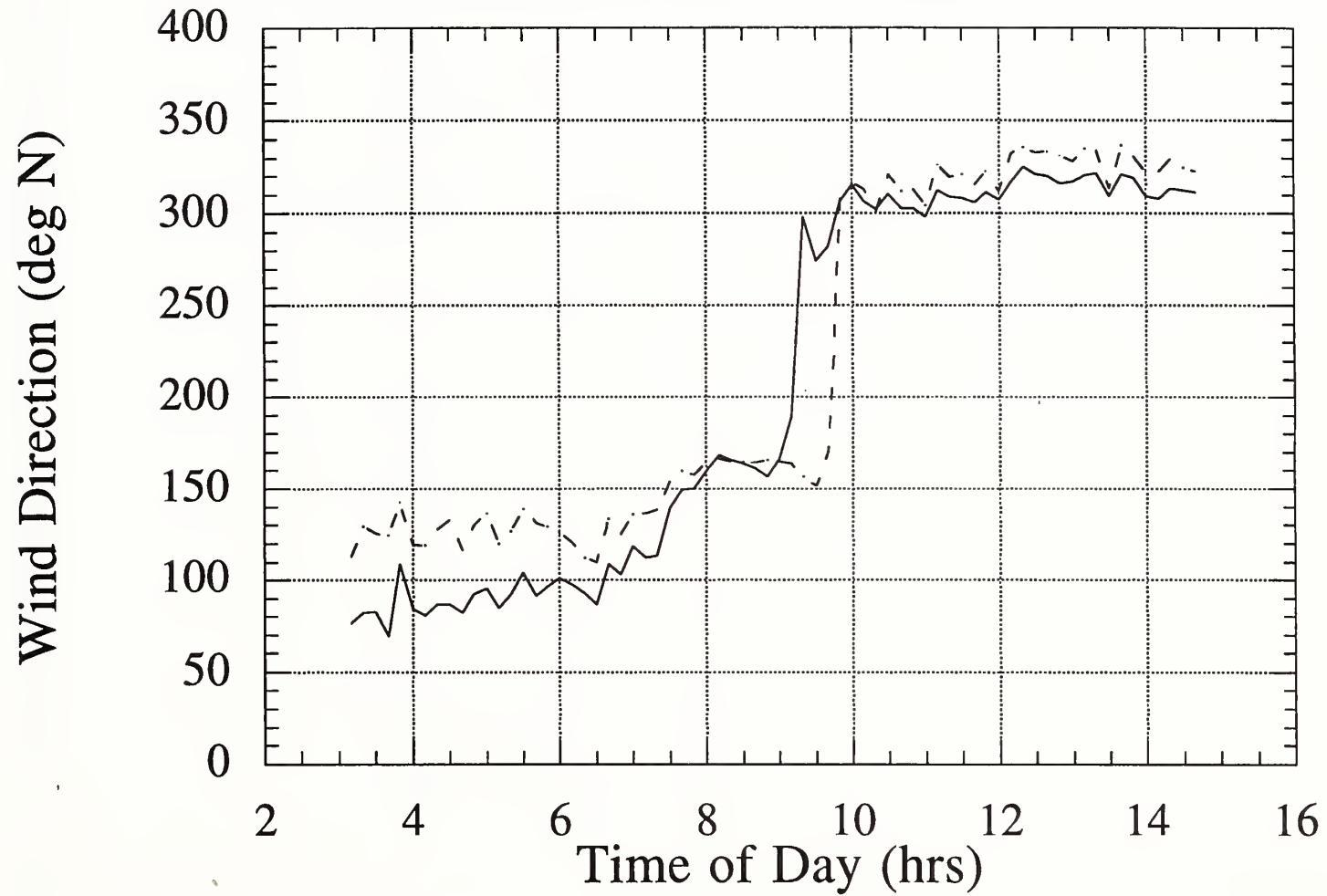




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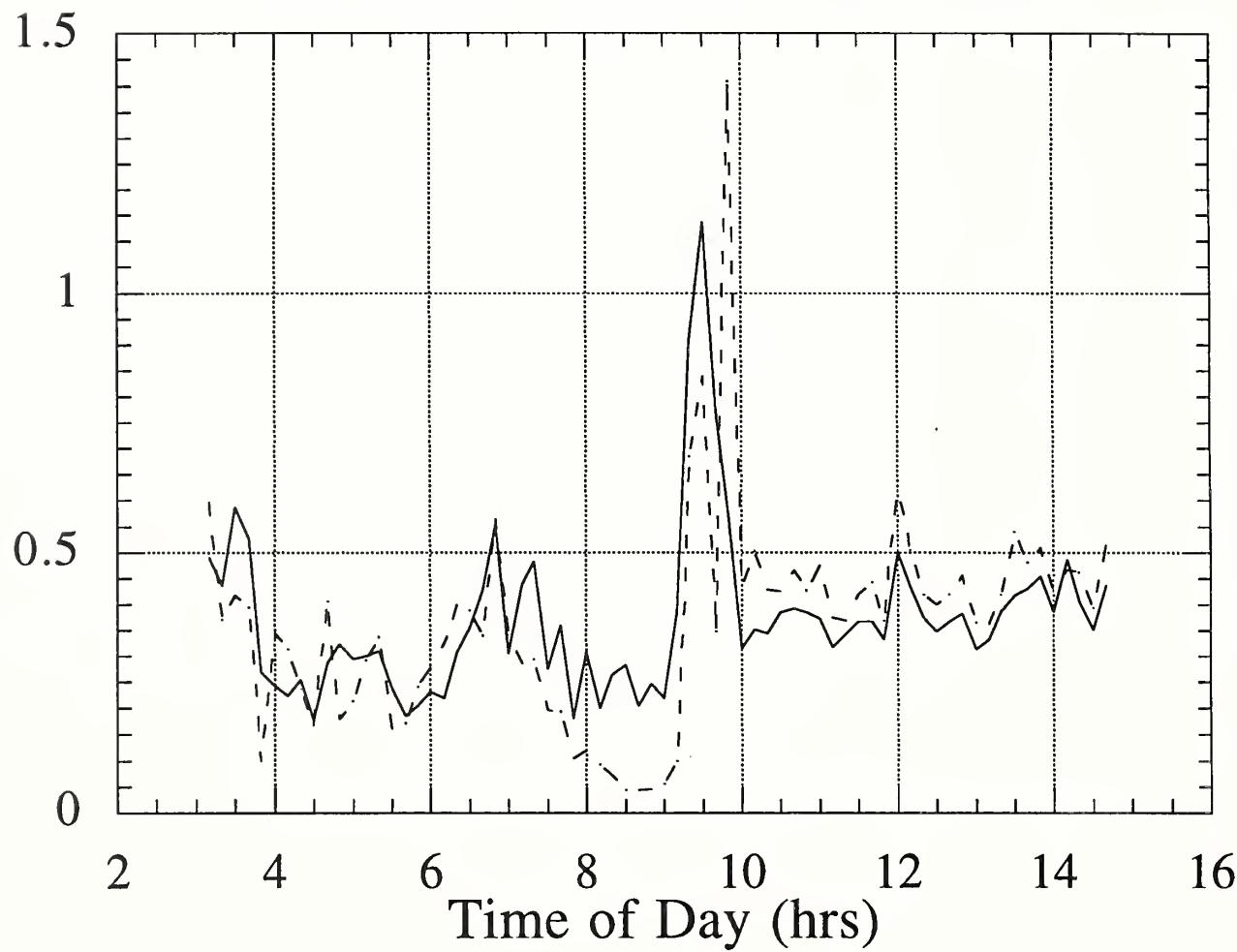


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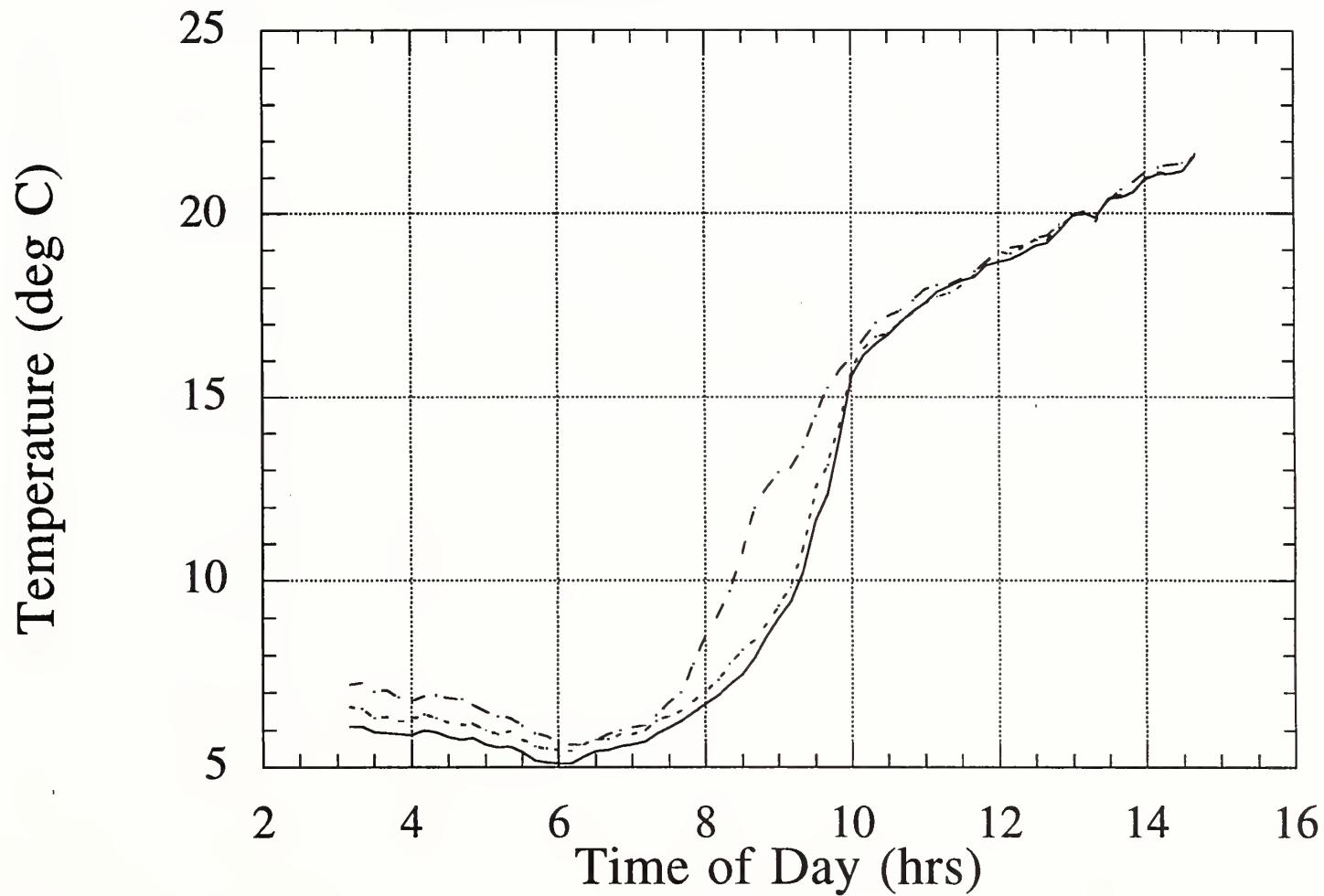


Azimuthal Standard Deviation (rad)

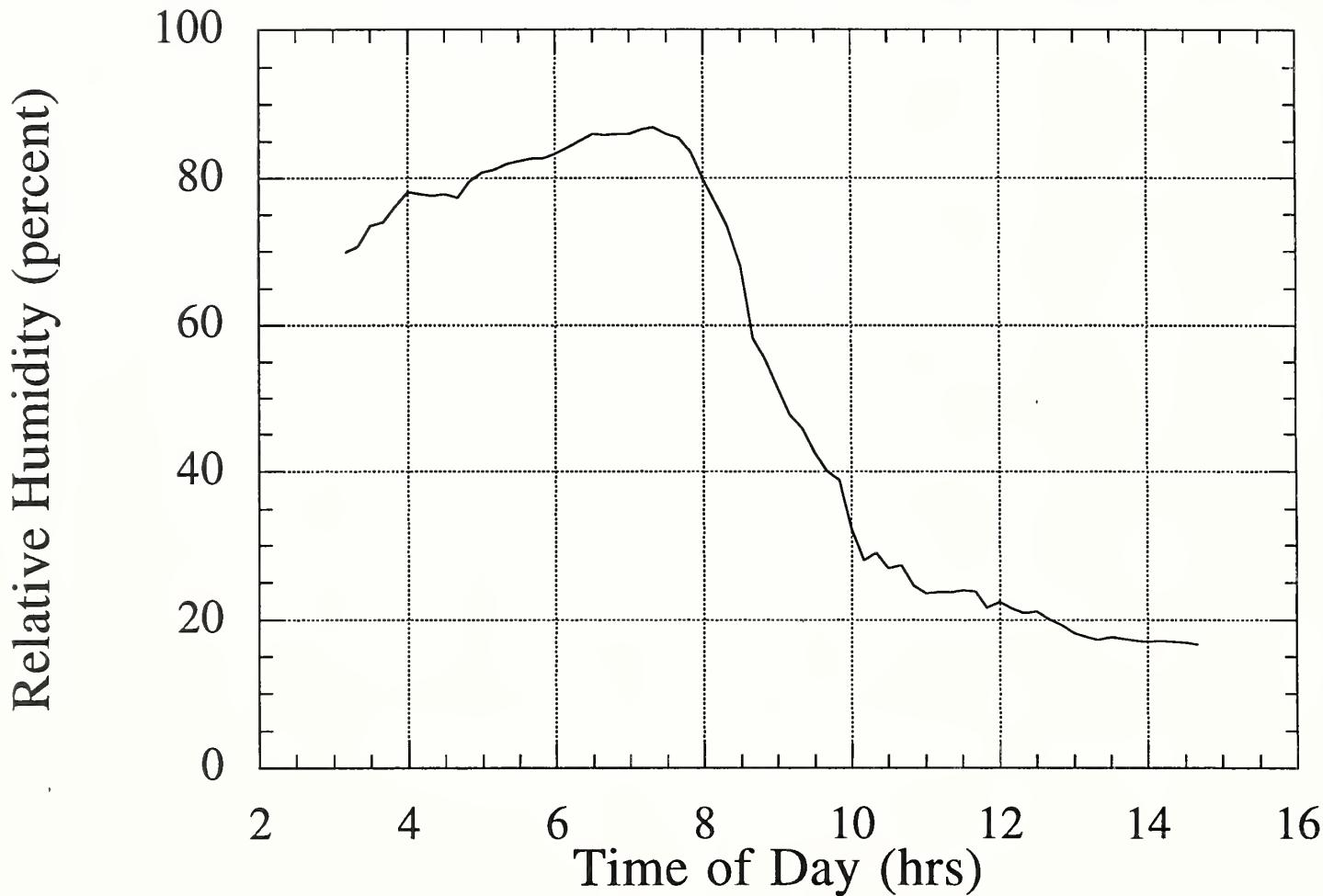
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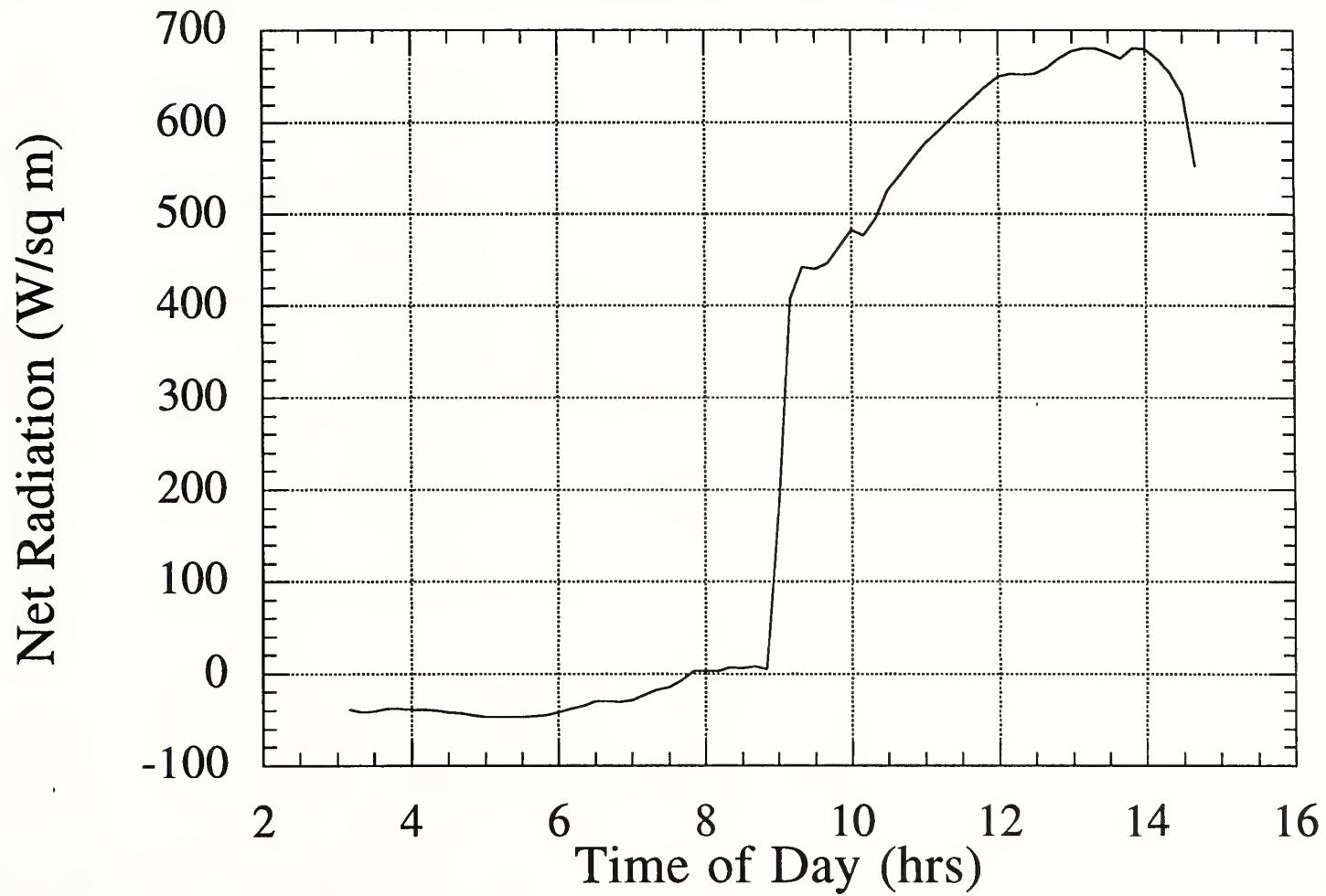
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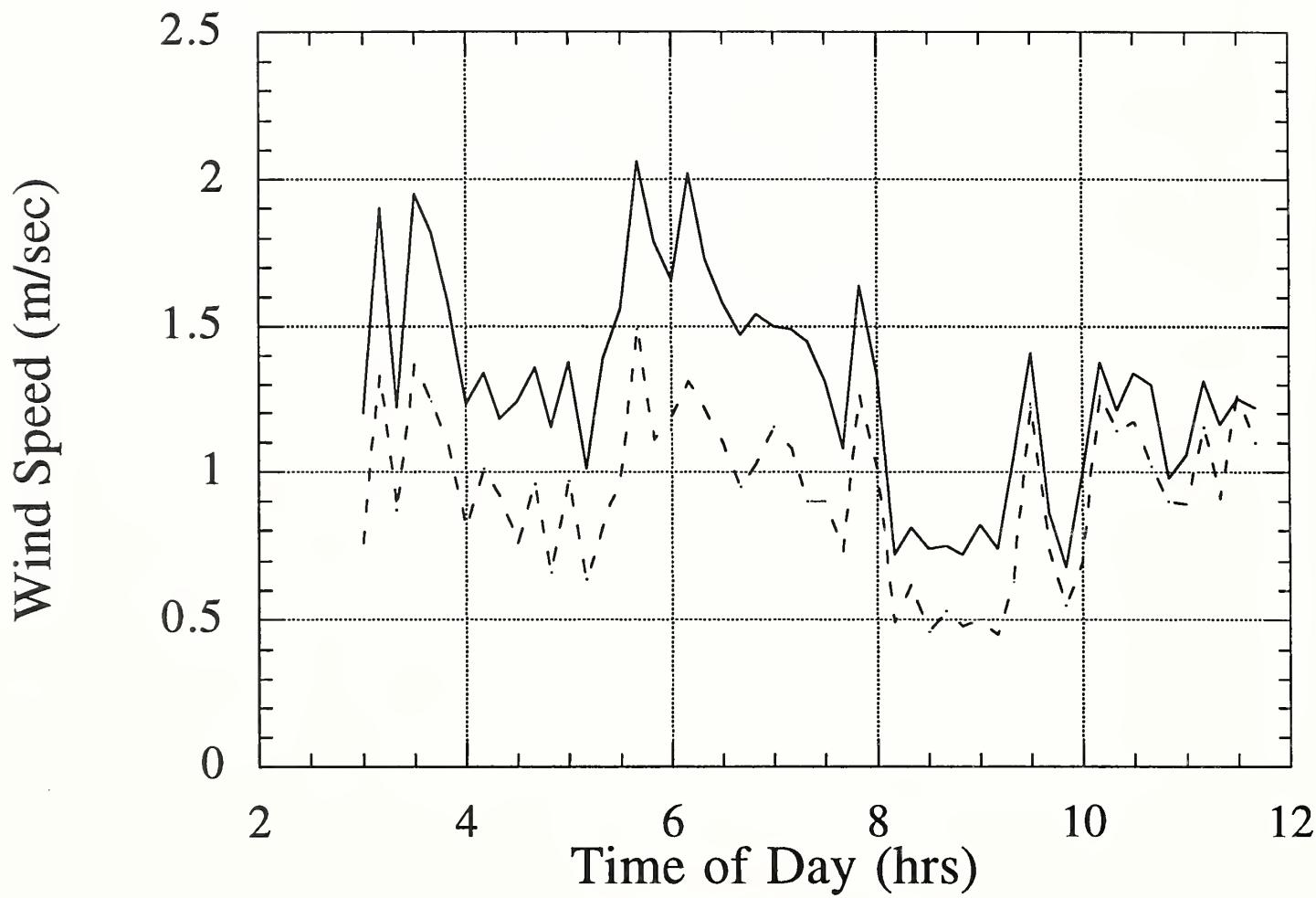
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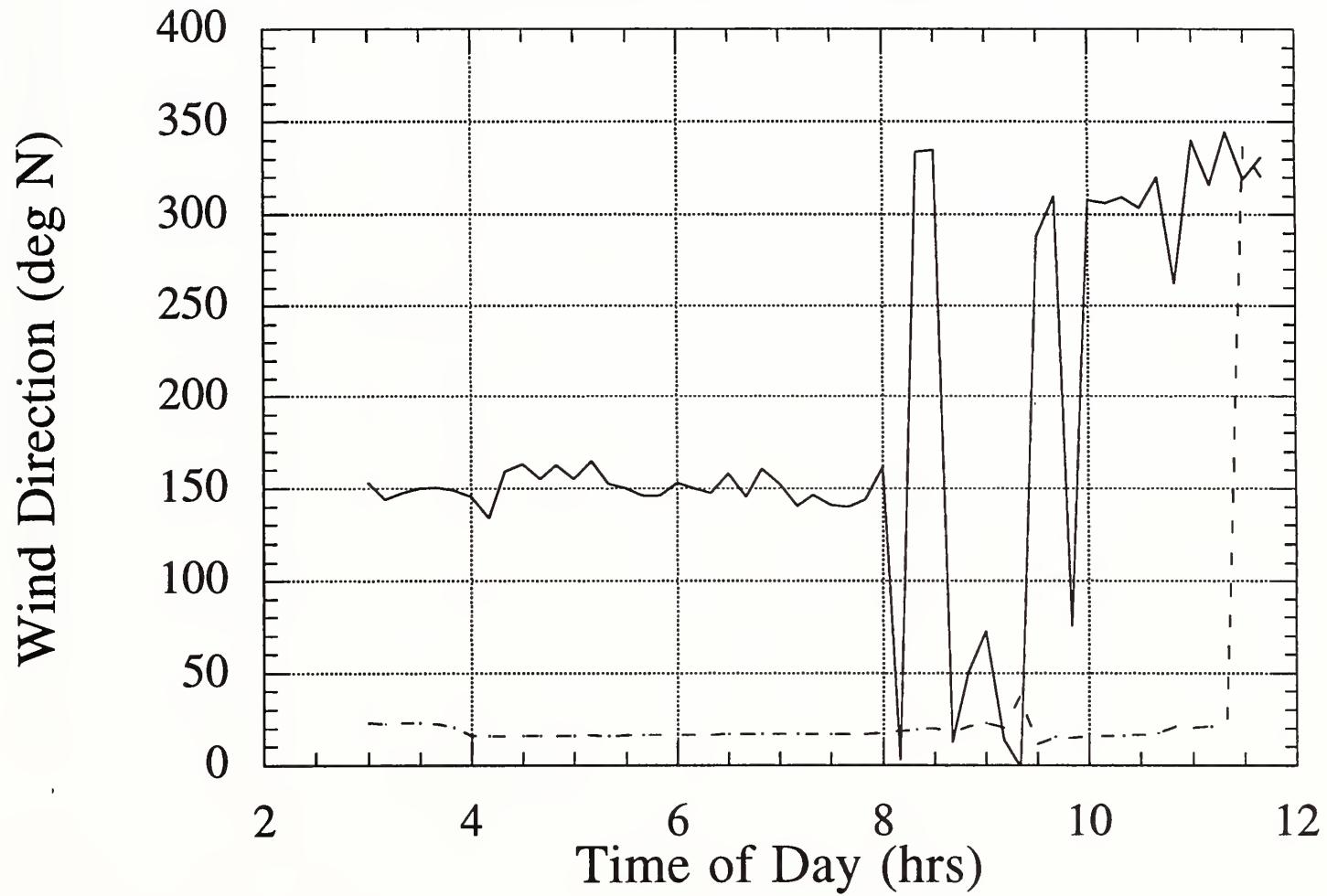
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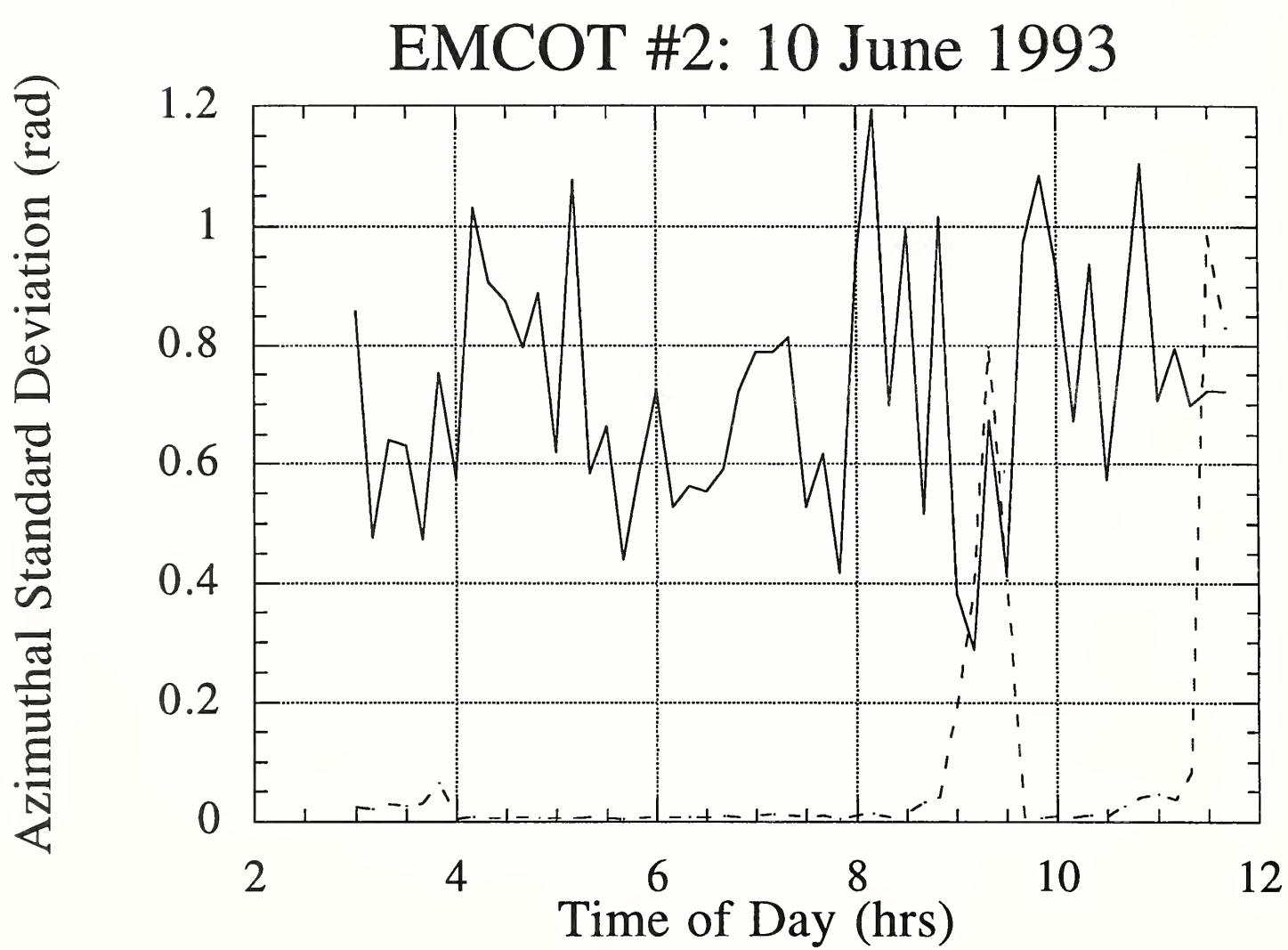


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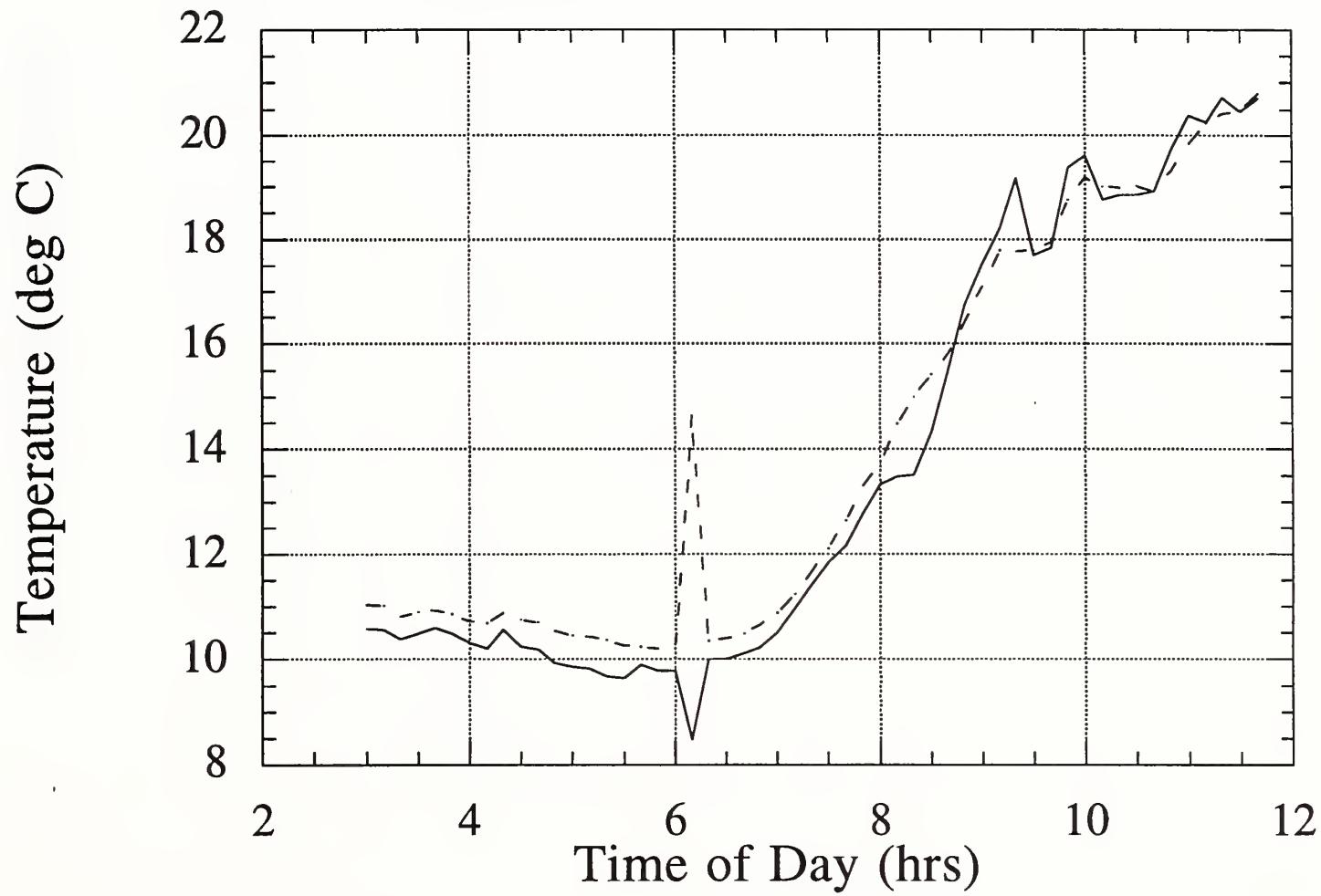


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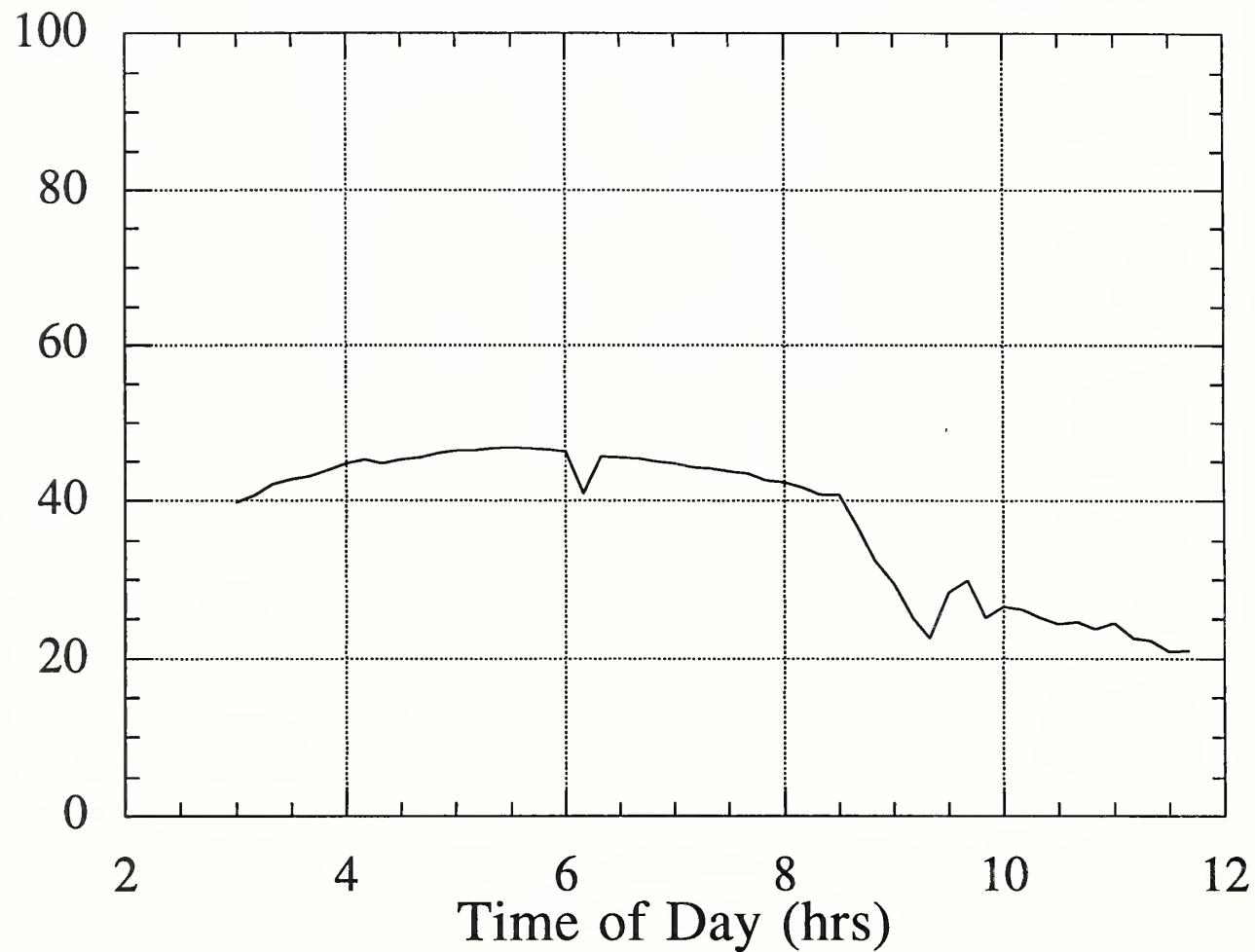


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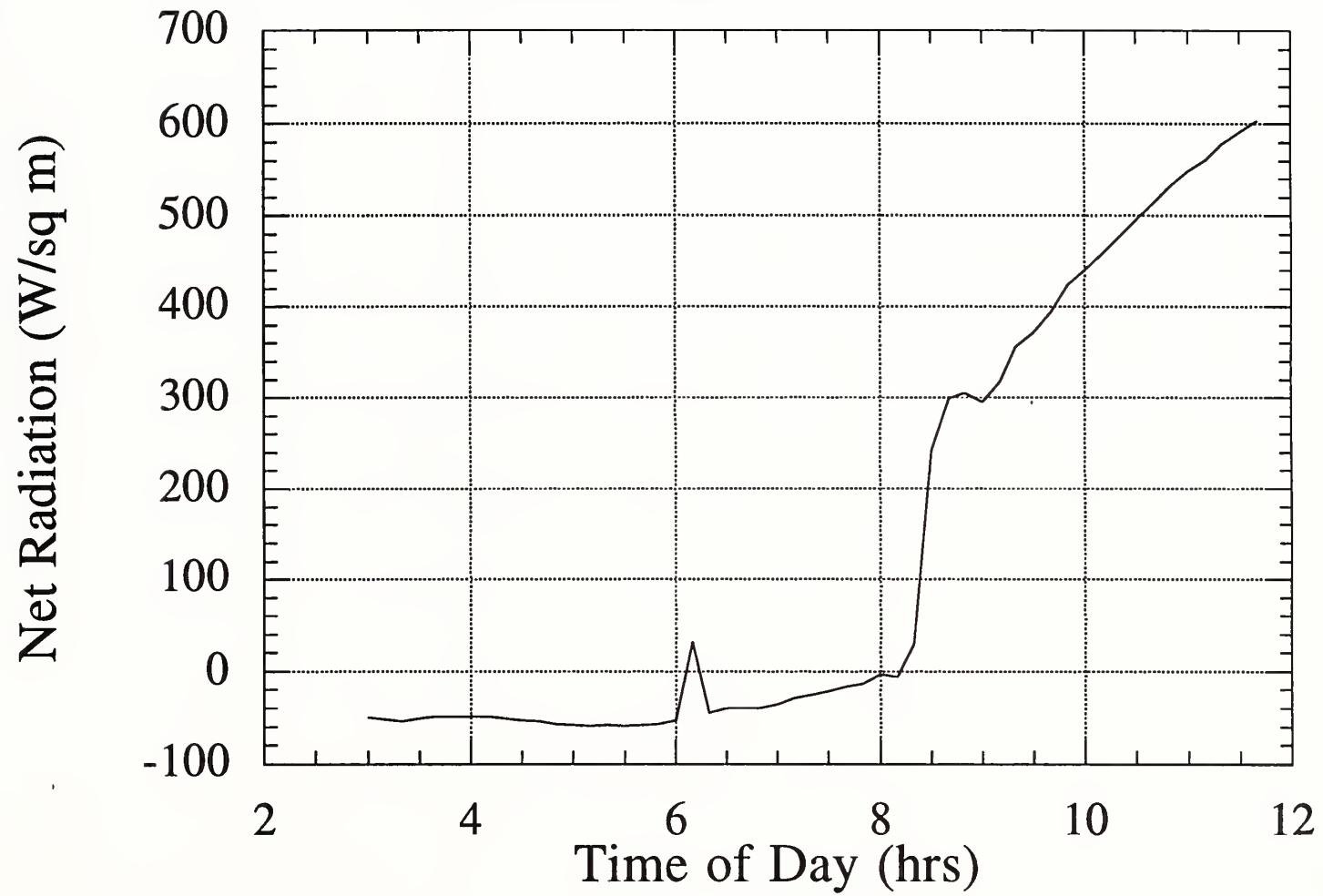


05

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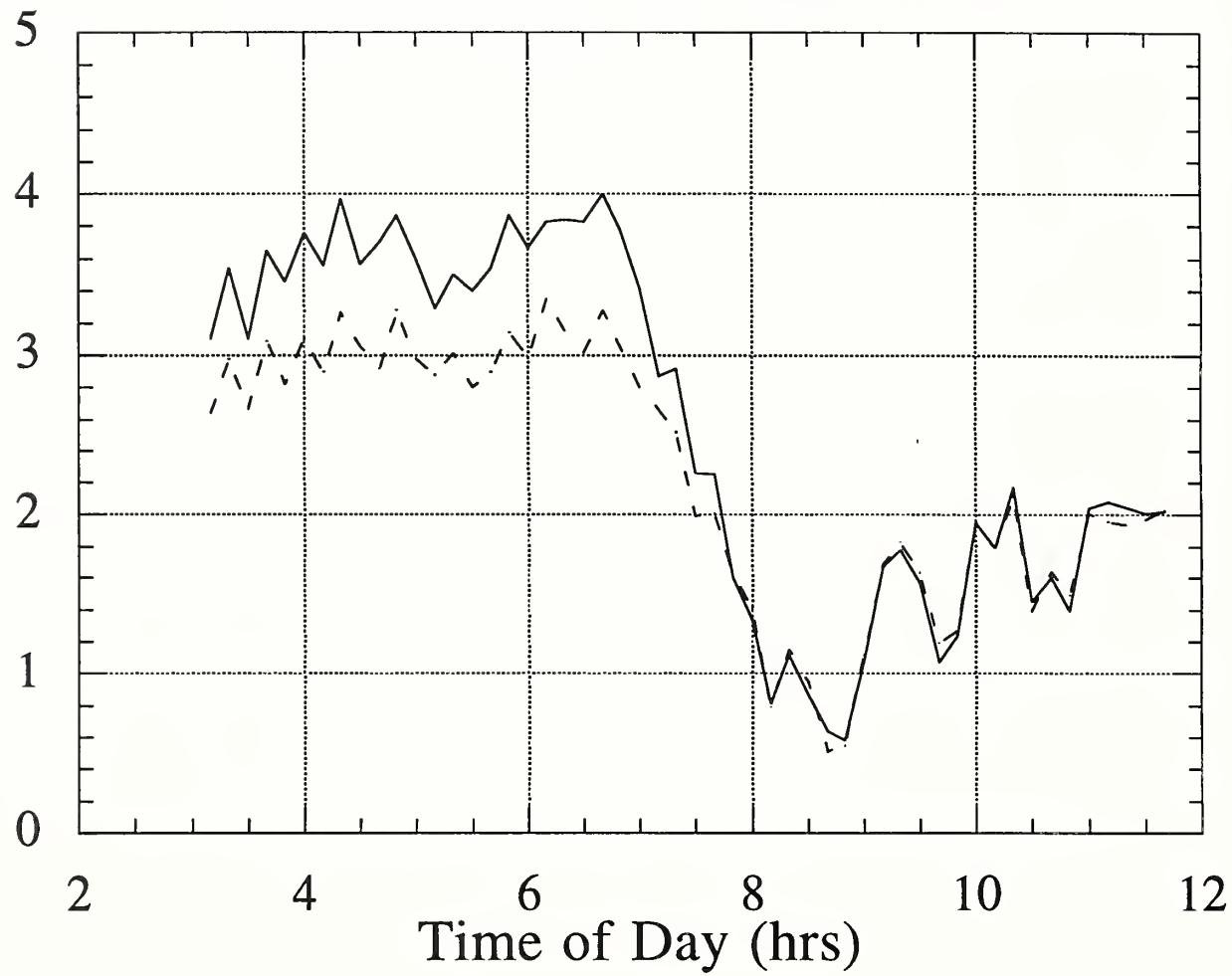


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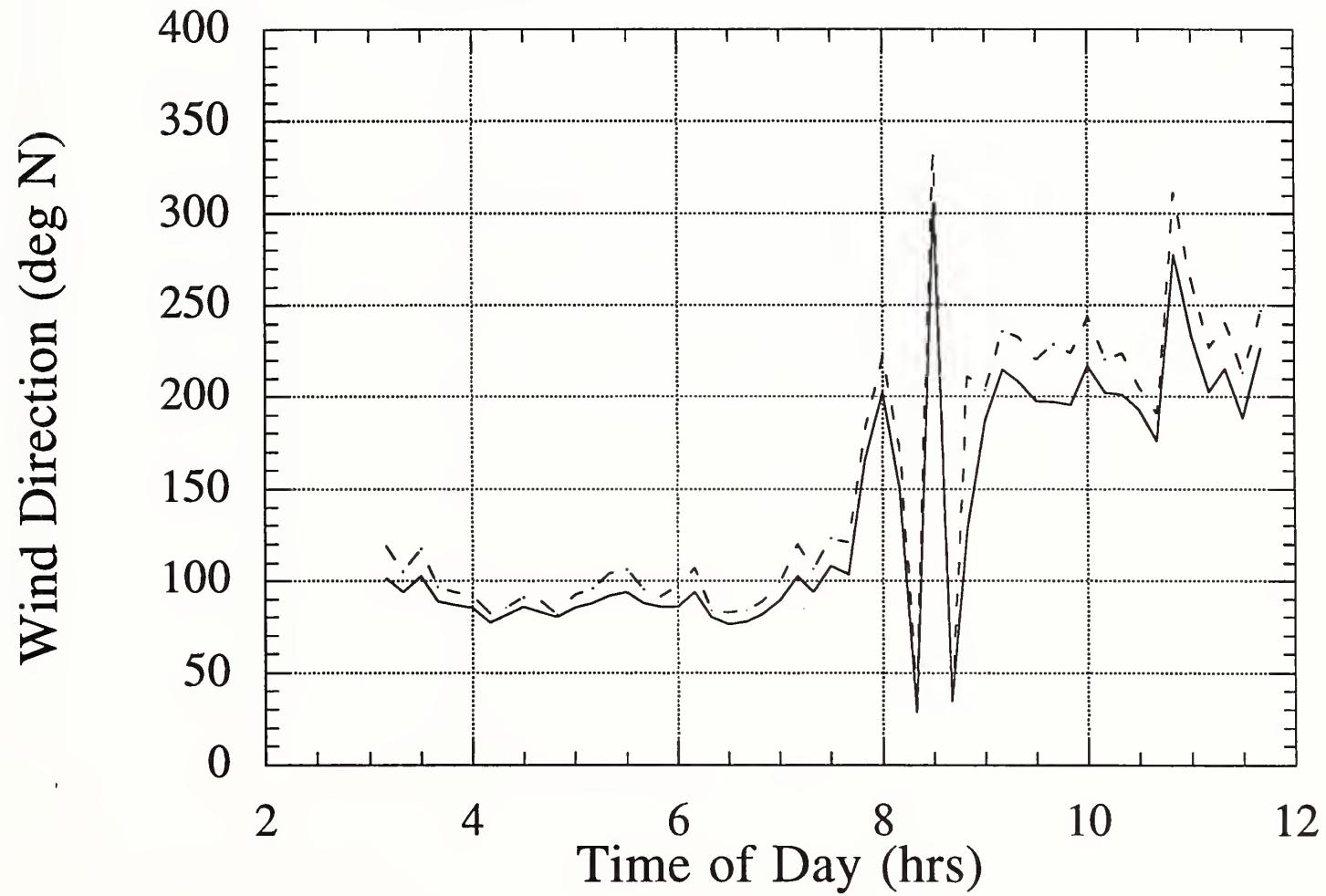


Wind Speed (m/sec)

EMCOT #3: 10 June 1993

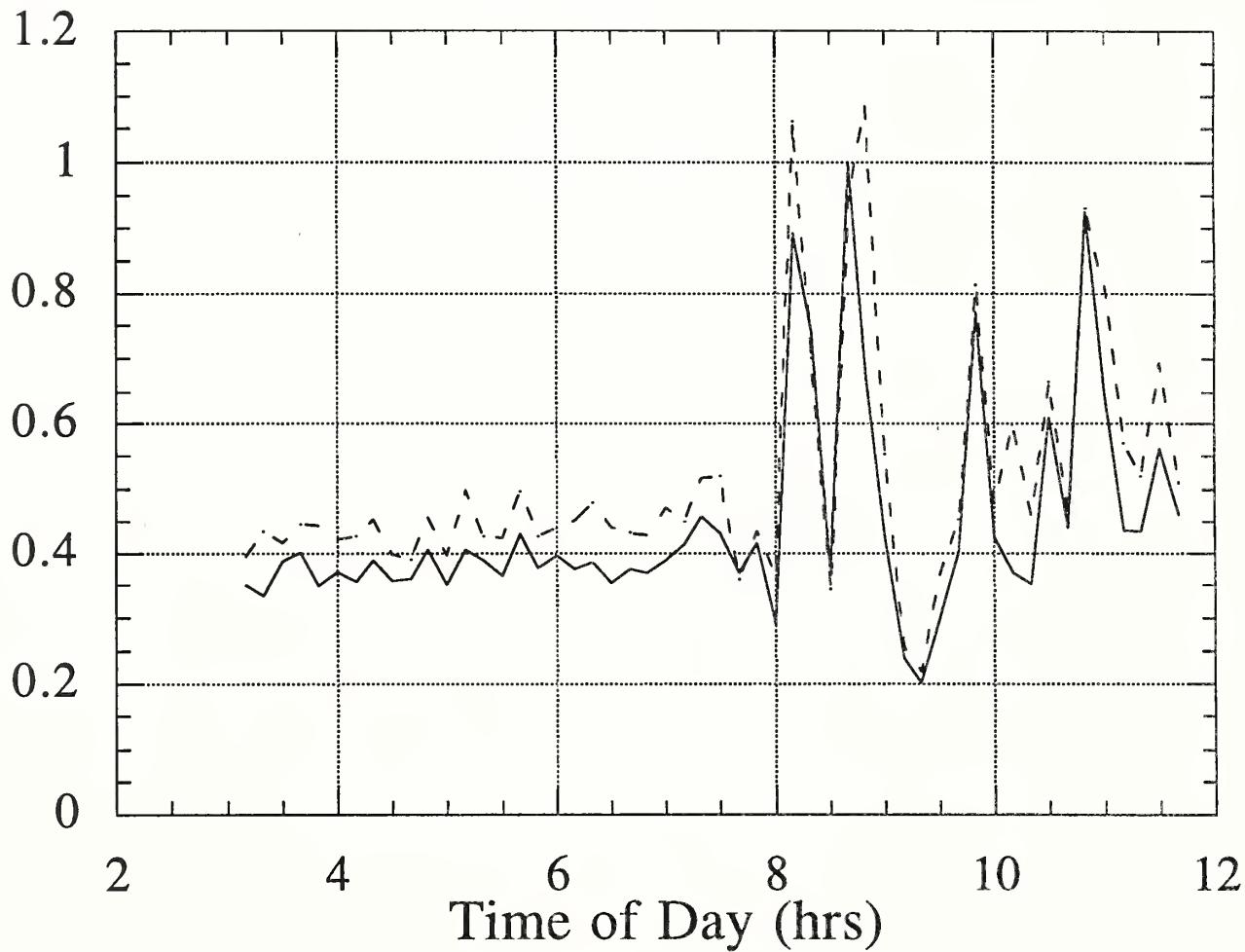


## EMCOT #3: 10 June 1993

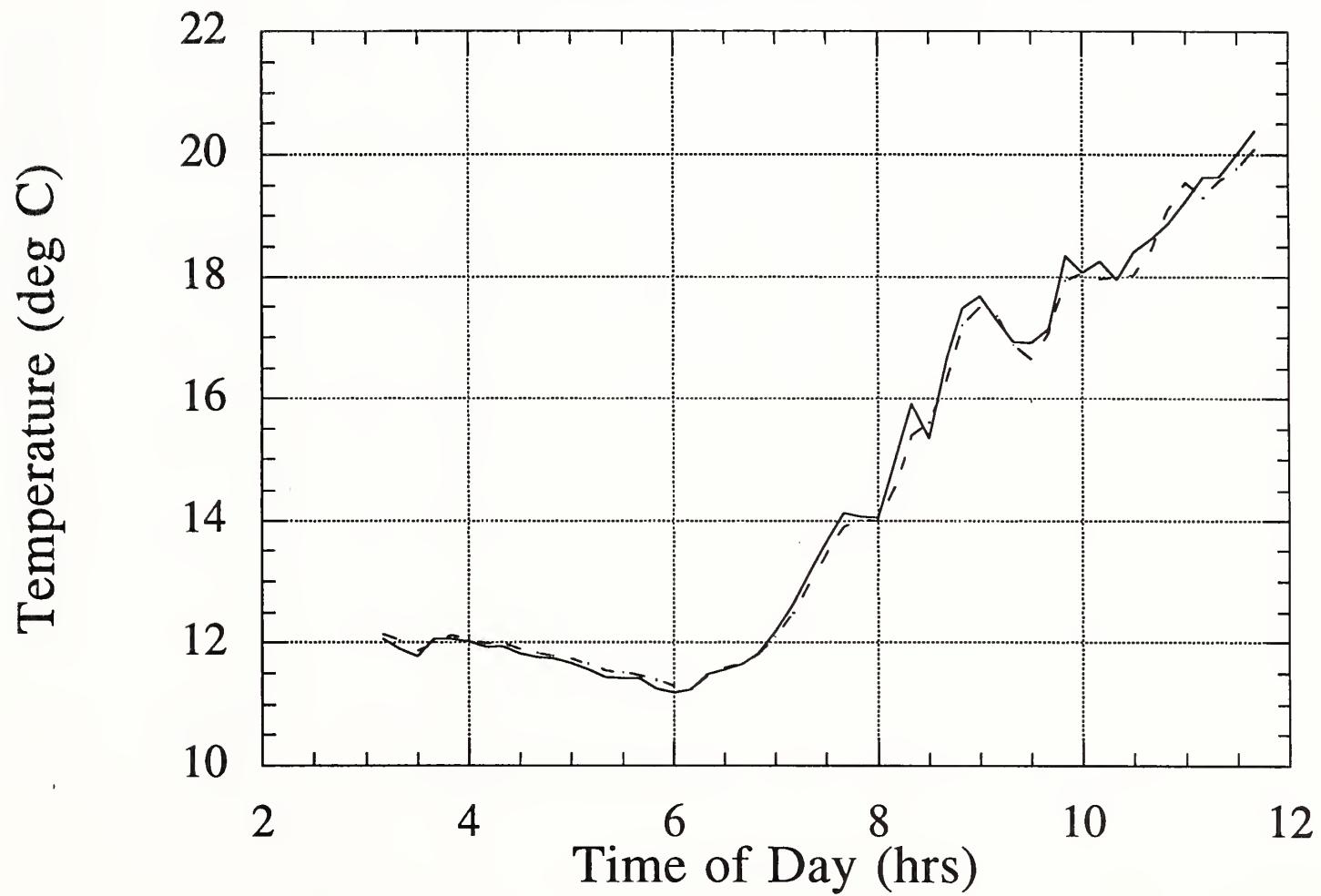


54  
Azimuthal Standard Deviation (rad)

EMCOT #3: 10 June 1993



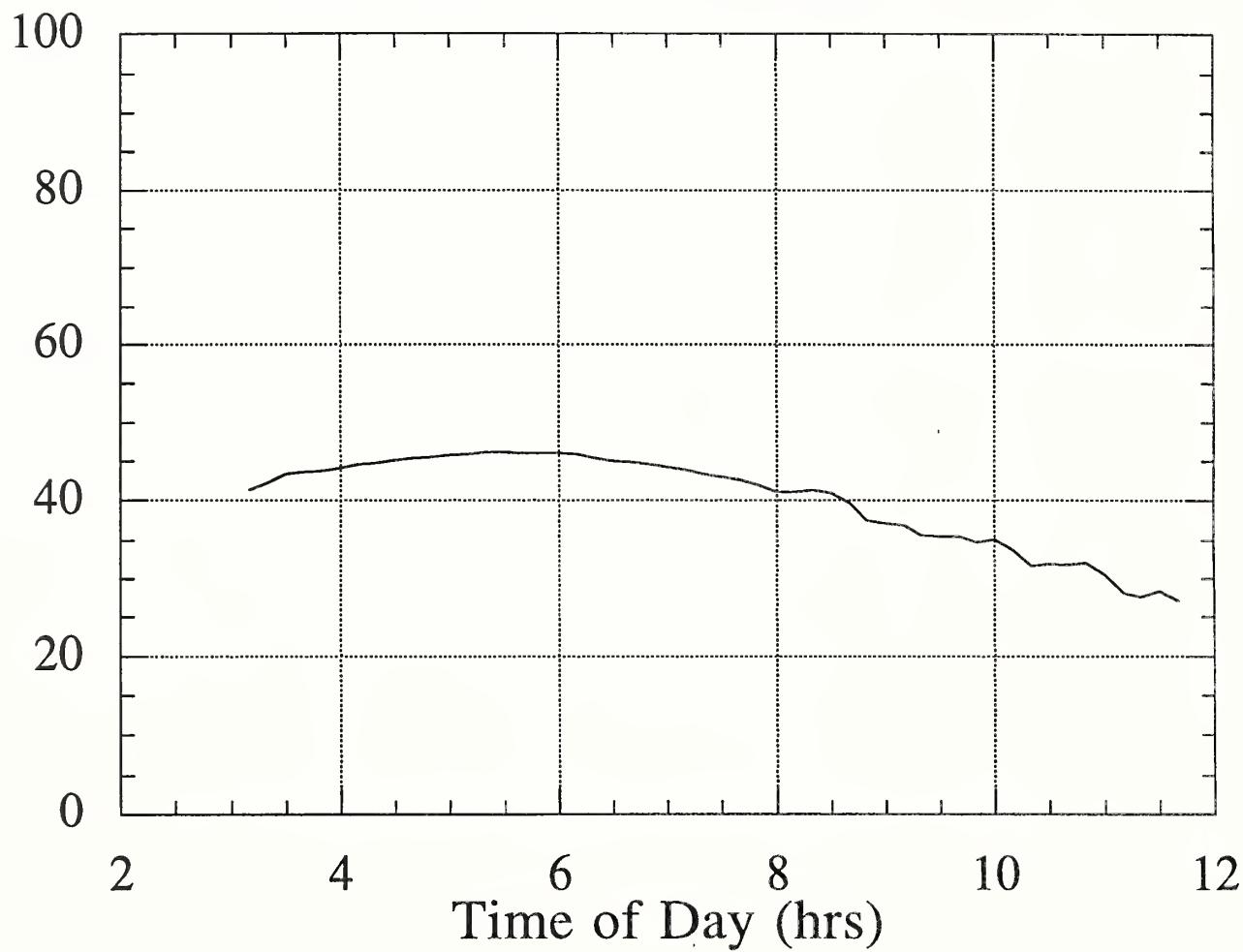
EMCOT #3: 10 June 1993



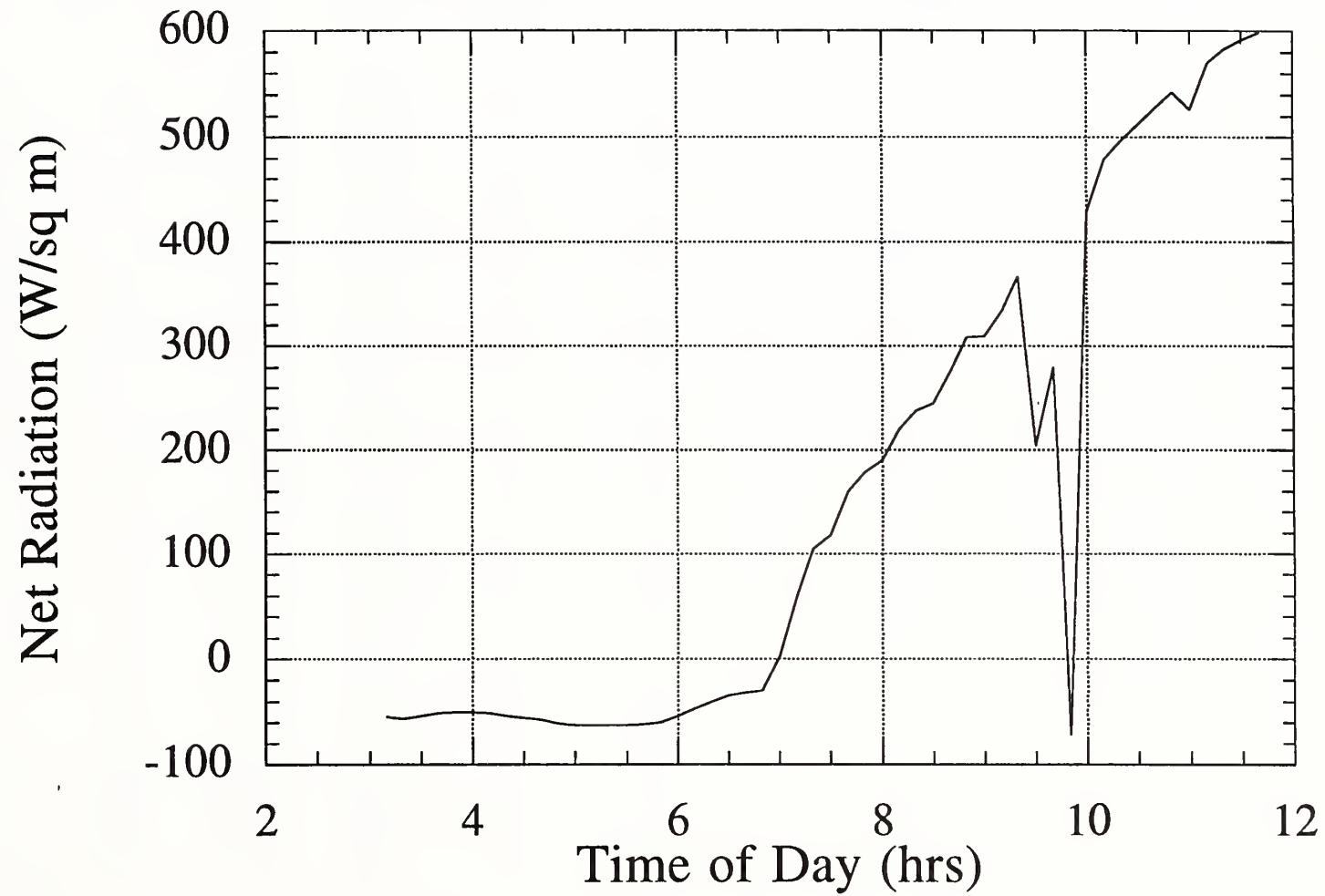
95

Relative Humidity (percent)

EMCOT #3: 10 June 1993



## EMCOT #3: 10 June 1993



### 3. DATA TABULATION

The following tables summarize the ten-minute averages of the three trials, with columns identified as:

1. Time of day (in hours after midnight).
2. Wind speed (in m/sec) at the upper height (6.1 m).
3. Wind direction (in deg relative to North) at the upper height (6.1 m).
4. Azimuthal standard deviation (in rad) at the upper height (6.1 m).
5. Wind speed (in m/sec) at mid-height (3.5 m).
6. Wind direction (in deg relative to North) at mid-height (3.5 m).
7. Azimuthal standard deviation (in rad) at mid-height (3.5 m).
8. Temperature (in deg C) at the lower height (1.2 m).
9. Temperature (in deg C) at the upper height (6.1 m).
10. Relative humidity (in percent).
11. Net radiation (in Watts/sq m).
12. Temperature (in deg C) at mid-height (3.5 m), for tower 1 only.

## EMCOT #1: 28 May 1993

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Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )	Mid Temp (deg C)
3.50	0.81	87.12	0.3960	1.09	88.28	0.3692	12.85	13.11	37.58	-52.60	12.96
3.67	0.71	63.61	0.2166	0.98	70.79	0.1993	12.62	12.85	39.05	-52.59	12.69
3.83	0.76	72.73	0.2721	1.13	77.99	0.1669	12.30	12.53	40.80	-52.66	12.37
4.00	0.74	85.45	0.3303	0.98	84.88	0.2757	12.16	12.28	41.87	-52.59	12.23
4.17	0.53	76.61	0.5605	0.48	80.83	0.7671	11.91	12.21	42.85	-52.33	11.99
4.33	0.60	71.01	0.5882	0.63	72.11	0.7260	11.70	12.21	43.75	-52.07	11.89
4.50	0.48	41.63	0.3934	0.55	45.17	0.2230	11.59	12.09	44.97	-51.60	11.72
4.67	0.37	38.01	0.8044	0.45	45.05	0.6306	11.45	11.90	45.21	-51.96	11.52
4.83	0.46	51.58	0.6281	0.54	52.19	0.6195	11.41	11.70	45.57	-51.09	11.46
5.00	0.55	96.82	0.3702	0.60	99.28	0.4080	11.51	11.69	45.26	-51.38	11.61
5.17	0.81	90.54	0.3583	0.92	95.10	0.3423	11.53	11.82	45.24	-51.40	11.67
5.33	0.81	82.35	0.5181	0.85	90.87	0.3997	11.01	11.48	47.60	-51.68	11.04
5.50	1.00	97.69	0.3460	0.87	98.55	0.3523	10.65	11.07	50.15	-51.56	10.67
5.67	0.58	124.99	0.5124	0.57	126.08	0.4667	10.92	11.28	47.92	-50.91	11.10
5.83	0.49	116.22	0.1852	0.45	108.77	0.3484	10.25	10.83	51.30	-50.16	10.30
6.00	0.66	89.23	0.3618	0.45	83.23	0.1725	9.71	10.37	56.80	-49.40	9.74
6.17	0.53	85.05	0.2899	0.46	76.86	0.2355	9.49	9.92	64.19	-46.97	9.43
6.33	0.57	85.09	0.1835	0.52	77.75	0.0937	9.72	9.86	67.02	-44.71	9.69
6.50	0.35	104.41	0.3403	0.47	84.28	0.2258	9.90	10.11	67.36	-41.99	10.00
6.67	0.34	110.85	0.4197	0.50	103.13	0.5639	9.89	10.17	67.97	-39.70	10.02
6.83	0.75	80.62	0.2011	0.46	84.26	0.1232	9.77	10.07	69.75	-38.54	9.76
7.00	0.31	79.57	0.1207	0.45	71.03	0.1419	9.76	9.95	72.51	-34.82	9.74
7.17	0.33	94.05	0.2589	0.45	94.85	0.4821	10.00	10.19	74.94	-30.75	10.10
7.33	0.51	130.61	0.1650	0.46	146.27	0.1195	10.09	10.46	72.31	-27.27	10.27
7.50	0.59	147.06	0.2604	0.52	154.67	0.1667	10.27	10.91	69.04	-24.41	10.39
7.67	0.73	160.36	0.2241	0.72	163.83	0.0727	10.50	11.36	67.32	-21.75	10.50
7.83	0.57	151.43	0.3597	0.96	161.69	0.0980	10.58	12.19	62.96	-19.49	10.60

## EMCOT #1: 28 May 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )	Mid Temp (deg C)
8.00	0.64	148.51	0.5116	0.97	162.79	0.1278	10.65	12.95	59.53	-17.39	10.67
8.17	0.49	153.86	0.2316	1.20	163.69	0.0536	10.75	13.38	57.05	-13.82	10.76
8.33	0.67	152.30	0.2371	1.24	161.98	0.0579	10.90	13.69	55.44	-10.01	10.94
8.50	0.74	166.58	0.2498	0.99	166.44	0.0405	11.09	13.97	53.97	-5.94	11.40
8.67	0.41	153.32	0.0517	1.34	165.74	0.0416	11.58	14.62	55.01	-0.09	11.74
8.83	0.46	202.52	1.1132	1.13	166.05	0.1550	12.34	15.61	48.52	28.77	12.44
9.00	0.39	245.12	0.7008	0.68	173.77	0.1332	13.07	16.59	44.25	220.85	13.67
9.17	0.32	215.69	1.1484	0.63	165.00	0.1863	13.89	17.36	41.57	363.15	14.57
9.33	0.38	289.04	0.4315	0.45	144.89	0.7556	14.87	17.92	40.77	352.13	15.52
9.50	0.69	309.31	0.4413	0.45	262.56	0.9741	16.69	18.25	39.01	407.51	16.96
9.67	0.62	302.52	0.7933	0.53	308.51	1.1490	18.58	18.63	36.25	419.84	18.02
9.83	1.21	325.69	0.2846	1.13	338.55	0.3593	18.97	19.13	30.47	427.16	18.58
10.00	1.09	322.73	0.4017	0.93	334.62	0.4459	19.06	19.34	30.07	423.88	18.66
10.17	0.99	329.49	0.6993	0.93	343.84	0.6550	19.72	19.71	29.23	464.38	19.14
10.33	1.08	324.49	0.3916	1.09	335.53	0.4413	19.55	19.94	29.01	470.95	19.22
10.50	1.55	325.06	0.4009	1.54	332.86	0.4148	20.01	20.11	24.18	448.46	19.60
10.67	1.51	318.64	0.3739	1.43	327.37	0.4283	19.61	20.02	20.61	327.75	19.34
10.83	1.58	317.10	0.3642	1.51	328.61	0.4026	20.64	20.45	17.64	424.14	20.19

## EMCOT #1: 4 June 1993

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )	Mid Temp (deg C)
3.50	0.36	104.44	0.3564	0.45	108.75	0.3577	2.03	2.12	93.35	-41.52	1.96
3.67	0.42	98.31	0.2807	0.45	87.41	0.1580	1.98	2.06	93.67	-40.63	1.95
3.83	0.29	91.62	0.3838	0.45	95.40	0.2977	1.98	2.00	93.97	-40.83	1.93
4.00	0.28	99.42	0.1586	0.45	89.17	0.2469	1.95	1.97	94.15	-40.70	1.93
4.17	0.44	90.38	0.2360	0.45	76.35	0.2305	2.12	2.00	94.10	-39.81	2.09
4.33	0.44	93.74	0.2037	0.45	91.86	0.2430	2.18	2.02	93.64	-40.01	2.16
4.50	0.64	89.34	0.1773	0.45	82.29	0.1394	2.35	2.10	93.08	-39.87	2.32
4.67	0.60	86.24	0.1843	0.45	79.71	0.1571	2.36	2.09	92.30	-40.05	2.26
4.83	0.66	86.78	0.2444	0.45	84.72	0.2531	2.42	2.18	91.68	-39.82	2.34
5.00	0.69	88.93	0.2281	0.45	82.63	0.1638	2.40	2.23	91.31	-39.82	2.34
5.17	0.70	65.04	0.3065	0.53	55.54	0.2808	2.54	2.36	90.86	-39.44	2.56
5.33	0.72	66.37	0.4429	0.47	74.11	0.5380	2.75	2.64	89.73	-39.60	2.80
5.50	0.64	78.00	0.3897	0.46	109.38	0.4854	2.47	2.79	89.14	-39.23	2.47
5.67	0.64	86.72	0.3138	0.45	105.08	0.3664	2.20	2.60	89.36	-39.45	2.22
5.83	0.67	82.45	0.1734	0.45	84.98	0.3208	2.32	2.49	89.08	-39.17	2.34
6.00	0.66	82.74	0.2164	0.45	77.84	0.1426	2.56	2.43	88.08	-36.97	2.49
6.17	0.75	81.72	0.2321	0.45	81.38	0.1482	2.77	2.52	86.88	-32.03	2.75
6.33	0.78	72.90	0.2113	0.45	70.84	0.1644	3.04	2.77	85.17	-26.18	3.02
6.50	0.77	75.11	0.4461	0.46	82.17	0.5436	3.38	3.30	83.96	-20.99	3.46
6.67	0.69	85.30	0.3279	0.47	106.12	0.4510	3.04	3.52	84.35	-17.45	3.07
6.83	0.54	100.68	0.3547	0.46	124.28	0.5561	3.15	3.59	84.75	-18.72	3.26
7.00	0.48	99.23	0.4390	0.45	128.92	0.4375	3.02	3.57	84.51	-18.76	3.00
7.17	0.37	93.62	0.2804	0.45	137.09	0.4405	3.10	3.68	86.33	-15.88	3.16
7.33	0.48	129.42	0.1943	0.45	149.53	0.1294	3.22	3.68	86.16	-17.08	3.17
7.50	0.46	118.40	0.1356	0.45	140.12	0.0697	3.26	3.69	86.78	-9.78	3.24
7.67	0.64	140.79	0.1744	0.56	153.18	0.1274	3.46	4.02	87.27	2.89	3.42
7.83	0.63	149.89	0.2109	0.90	157.42	0.1019	3.75	4.65	86.29	23.24	3.73

## EMCOT #1: 4 June 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )	Mid Temp (deg C)
8.00	0.51	152.68	0.2279	0.96	163.10	0.1074	4.39	5.72	82.55	76.89	4.40
8.17	0.43	147.11	0.2661	1.01	159.97	0.0932	5.20	6.65	79.71	94.36	5.20
8.33	0.43	157.79	0.3194	0.91	161.71	0.1029	5.88	7.52	77.18	91.59	5.98
8.50	0.27	152.17	0.5563	0.90	158.55	0.0850	6.33	8.37	74.02	73.24	6.53
8.67	0.32	131.36	0.4002	0.87	157.95	0.1663	6.88	9.27	71.54	105.57	7.18
8.83	0.28	154.67	0.7547	0.62	156.88	0.1178	7.51	9.92	65.38	137.81	7.82
9.00	0.30	268.97	0.8081	0.45	155.38	0.2555	8.39	10.84	49.52	153.10	9.06
9.17	0.28	262.29	0.6205	0.45	172.12	0.0374	8.72	11.37	52.14	102.32	9.11
9.33	0.40	318.69	0.5484	0.45	357.71	1.2366	9.76	11.49	58.02	256.90	9.91
9.50	0.71	313.00	0.3723	0.53	308.59	0.4443	11.02	11.67	47.14	267.39	10.94
9.67	0.65	319.92	0.4288	0.53	332.86	0.4199	11.40	11.98	44.05	258.45	11.39
9.83	1.07	323.36	0.3115	0.83	331.19	0.3404	11.66	12.23	36.61	238.38	11.66
10.00	0.86	317.76	0.5307	0.76	339.00	0.5716	11.82	12.35	38.23	254.45	11.83
10.17	0.95	322.64	0.7067	0.90	337.98	0.5919	12.33	12.72	36.86	265.29	12.37
10.33	1.19	312.58	0.4550	1.10	321.72	0.4832	12.04	12.70	34.53	129.40	12.08
10.50	1.68	311.15	0.4273	1.59	320.40	0.4189	10.96	11.98	37.01	57.24	11.04
10.67	1.24	305.85	0.6172	1.13	313.25	0.6132	10.33	11.13	41.30	73.28	10.41
10.83	0.93	277.95	0.6897	0.91	290.09	0.7239	10.32	10.86	40.48	105.34	10.42
11.00	0.75	265.84	0.8597	0.78	281.15	0.9769	10.55	11.05	41.38	139.11	10.68
11.17	0.74	328.49	0.8057	0.62	351.88	0.8298	11.30	11.55	38.28	194.34	11.40

## EMCOT #1: 10 June 1993

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )	Mid Temp (deg C)	
63	3.17	0.88	76.64	0.4909	0.79	113.00	0.5970	6.09	7.23	69.92	-39.24	6.62
	3.33	0.72	82.38	0.4366	0.75	129.06	0.3720	6.09	7.27	70.64	-41.45	6.59
	3.50	0.74	82.46	0.5869	0.71	125.54	0.4176	5.94	7.04	73.52	-41.17	6.33
	3.67	0.81	69.46	0.5260	0.79	124.26	0.3940	5.92	7.07	74.04	-37.66	6.36
	3.83	0.71	108.77	0.2704	0.95	142.58	0.0989	5.89	6.90	76.10	-37.94	6.25
	4.00	0.78	83.99	0.2422	0.85	119.30	0.3452	5.87	6.79	78.10	-38.33	6.28
	4.17	0.80	80.71	0.2238	0.84	119.06	0.3128	5.98	6.91	77.84	-38.50	6.42
	4.33	0.78	86.74	0.2550	0.89	127.78	0.2365	5.93	6.93	77.65	-40.21	6.34
	4.50	0.78	86.55	0.1777	0.97	132.72	0.1688	5.82	6.86	77.83	-42.29	6.19
	4.67	0.75	82.25	0.2880	0.76	116.31	0.4052	5.73	6.83	77.39	-42.47	6.15
	4.83	0.62	92.26	0.3233	0.76	129.90	0.1796	5.79	6.68	79.52	-44.91	6.18
	5.00	0.69	95.26	0.2937	0.89	136.52	0.2154	5.62	6.49	80.73	-46.63	6.00
	5.17	0.72	84.66	0.3002	0.70	119.79	0.2928	5.53	6.37	81.14	-46.81	5.90
	5.33	0.70	92.61	0.3098	0.81	126.74	0.3373	5.57	6.33	81.88	-46.88	5.97
	5.50	0.62	104.23	0.2392	0.84	139.06	0.1638	5.40	6.13	82.30	-46.72	5.74
	5.67	0.64	91.29	0.1866	0.78	131.01	0.1727	5.18	5.92	82.69	-45.69	5.56
	5.83	0.50	96.64	0.2046	0.67	129.24	0.2417	5.12	5.83	82.66	-44.79	5.51
	6.00	0.54	101.20	0.2316	0.62	125.72	0.2773	5.10	5.67	83.37	-41.50	5.46
	6.17	0.29	97.68	0.2200	0.55	120.50	0.3247	5.09	5.60	84.23	-37.52	5.44
	6.33	0.53	92.91	0.3075	0.45	112.61	0.3981	5.29	5.61	85.14	-34.76	5.60
	6.50	0.68	86.79	0.3563	0.55	109.81	0.3888	5.43	5.73	86.01	-30.11	5.74
	6.67	0.65	108.52	0.4270	0.73	132.92	0.3407	5.45	5.88	85.93	-29.19	5.76
	6.83	0.69	103.30	0.5533	0.73	124.87	0.5648	5.57	5.98	85.99	-31.06	5.88
	7.00	0.66	118.47	0.3059	0.70	135.96	0.3436	5.60	6.06	86.02	-28.42	5.88
	7.17	0.67	112.48	0.4379	0.71	136.10	0.2882	5.68	6.11	86.70	-22.30	5.98
	7.33	0.77	113.20	0.4825	0.92	138.45	0.2949	5.89	6.41	86.87	-17.64	6.26
	7.50	0.67	139.40	0.2749	0.89	154.16	0.1977	6.07	6.75	86.07	-14.69	6.39

## EMCOT #1: 10 June 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )	Mid Temp (deg C)
7.67	0.75	149.73	0.3597	1.00	159.80	0.1929	6.25	7.02	85.51	-7.40	6.54
7.83	0.83	149.93	0.1809	1.14	158.00	0.1057	6.47	7.79	83.62	2.92	6.78
8.00	0.78	159.77	0.3086	1.07	164.53	0.1202	6.72	8.52	79.88	3.53	7.04
8.17	0.85	168.38	0.2001	1.02	166.44	0.0932	6.95	9.12	76.42	3.48	7.34
8.33	0.77	166.01	0.2640	1.09	164.99	0.0721	7.21	9.73	73.43	7.26	7.78
8.50	0.60	163.83	0.2826	1.42	165.06	0.0431	7.49	10.74	68.01	6.49	8.16
8.67	0.58	161.18	0.2058	1.54	164.37	0.0438	7.93	11.97	58.18	8.09	8.43
8.83	0.70	156.59	0.2478	1.50	165.70	0.0454	8.53	12.49	55.44	5.13	8.85
9.00	0.73	166.46	0.2194	1.43	164.86	0.0546	9.02	12.93	51.55	178.89	9.33
9.17	0.69	189.37	0.3847	1.29	163.68	0.0996	9.45	13.06	47.72	407.86	9.83
9.33	0.49	298.14	0.9064	0.73	156.69	0.6849	10.21	13.62	45.90	441.69	10.83
9.50	0.42	274.71	1.1380	0.59	151.79	0.8391	11.64	14.46	42.45	440.08	12.53
9.67	0.36	282.53	0.7712	0.47	170.84	0.3489	12.35	15.27	40.05	446.42	13.14
9.83	0.75	306.26	0.5654	0.63	307.86	1.4101	13.92	15.74	38.88	464.41	14.29
10.00	1.10	315.53	0.3157	1.02	316.54	0.4356	15.59	16.12	32.14	482.92	15.74
10.17	1.25	306.22	0.3518	1.20	313.06	0.5040	16.17	16.58	28.01	477.08	16.33
10.33	1.14	302.36	0.3444	1.11	301.14	0.4284	16.46	17.02	28.91	495.00	16.63
10.50	1.38	310.25	0.3845	1.28	321.35	0.4258	16.70	17.20	26.92	526.03	16.75
10.67	1.23	302.97	0.3917	1.24	312.03	0.4648	17.06	17.38	27.34	542.88	17.06
10.83	1.30	302.83	0.3841	1.32	312.79	0.4267	17.32	17.63	24.58	560.70	17.31
11.00	1.26	298.05	0.3732	1.23	304.34	0.4747	17.56	17.93	23.61	576.71	17.57
11.17	1.45	312.74	0.3181	1.38	325.97	0.3759	17.87	18.04	23.78	588.83	17.74
11.33	1.50	309.02	0.3419	1.43	319.31	0.3691	18.02	18.06	23.72	602.16	17.84
11.50	1.62	308.24	0.3673	1.52	320.93	0.4184	18.17	18.22	24.03	614.90	18.04
11.67	1.39	305.71	0.3672	1.41	315.63	0.4423	18.27	18.43	23.86	628.00	18.32
11.83	1.43	311.35	0.3338	1.32	322.67	0.3701	18.59	18.67	21.66	639.68	18.65
12.00	1.41	307.62	0.5001	1.37	311.98	0.6197	18.67	19.00	22.51	650.15	18.94

## EMCOT #1: 10 June 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )	Mid Temp (deg C)
12.17	1.69	317.25	0.4332	1.56	332.22	0.5049	18.77	19.05	21.58	653.91	18.92
12.33	1.65	325.04	0.3751	1.53	335.64	0.4193	18.91	19.11	20.95	652.84	19.06
12.50	1.71	321.37	0.3487	1.59	332.94	0.3991	19.12	19.29	21.19	653.34	19.27
12.67	1.65	319.87	0.3678	1.57	333.41	0.4201	19.18	19.40	20.18	660.28	19.27
12.83	1.49	315.79	0.3829	1.46	331.60	0.4550	19.53	19.70	19.45	670.48	19.63
13.00	1.65	317.24	0.3147	1.52	328.28	0.3657	19.94	19.96	18.27	677.93	19.93
13.17	1.71	320.61	0.3333	1.56	335.11	0.3637	20.02	20.06	17.70	681.03	19.98
13.33	1.65	321.80	0.3866	1.56	334.13	0.4192	19.88	20.00	17.34	681.04	19.78
13.50	1.42	309.53	0.4175	1.37	313.25	0.5397	20.42	20.36	17.66	676.22	20.41
13.67	1.27	321.27	0.4302	1.29	336.88	0.4800	20.45	20.68	17.45	670.09	20.53
13.83	1.40	318.89	0.4540	1.36	330.84	0.5097	20.60	20.89	17.20	681.23	20.60
14.00	1.40	309.21	0.3858	1.39	322.36	0.4243	20.95	21.15	17.15	679.98	20.99
14.17	1.54	307.75	0.4856	1.46	322.52	0.4673	21.12	21.28	17.18	669.05	21.16
14.33	1.65	313.35	0.4063	1.57	329.38	0.4612	21.10	21.35	17.06	655.22	21.12
14.50	1.70	312.35	0.3520	1.56	324.71	0.3937	21.18	21.40	17.01	631.61	21.21
14.67	1.46	311.35	0.4367	1.37	322.52	0.5142	21.63	21.63	16.77	552.54	21.66

## EMCOT #2: 28 May 1993

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
4.00	0.89	63.06	0.9361	-	-	-	14.74	16.85	25.06	-62.30
4.17	1.02	309.56	1.2503	-	-	-	13.43	15.68	28.78	-60.73
4.33	1.41	358.52	1.2669	-	-	-	13.16	15.48	29.79	-59.94
4.50	1.46	87.89	0.7337	-	-	-	14.36	15.57	29.24	-60.93
4.67	1.48	130.94	0.8544	-	-	-	13.46	15.40	30.14	-60.02
4.83	1.15	153.67	1.2421	-	-	-	12.49	14.97	31.94	-60.70
5.00	1.30	112.10	0.2203	-	-	-	11.92	14.05	37.50	-59.86
5.17	1.79	121.55	0.4500	-	-	-	12.07	13.91	39.17	-59.33
5.33	2.64	127.57	0.2544	-	-	-	12.94	14.36	37.61	-59.89
5.50	1.49	119.14	0.3212	-	-	-	13.12	14.45	37.47	-60.32
5.67	1.68	122.51	0.3554	-	-	-	12.20	13.96	39.24	-59.38
5.83	1.41	145.20	0.5105	-	-	-	11.97	13.68	39.74	-57.96
6.00	2.22	141.11	0.9374	-	-	-	12.40	13.91	38.95	-55.45
6.17	3.15	128.08	0.3036	-	-	-	13.96	14.70	36.56	-55.46
6.33	2.79	126.47	0.3757	-	-	-	13.99	14.62	37.19	-52.87
6.50	2.44	141.26	0.3995	-	-	-	13.53	14.21	38.95	-49.46
6.67	2.48	152.42	0.4768	-	-	-	13.54	14.01	39.94	-47.03
6.83	1.69	160.78	0.7906	-	-	-	13.08	13.71	41.61	-43.61
7.00	3.66	143.42	0.4751	-	-	-	13.35	13.82	42.16	-39.88
7.17	3.24	140.72	0.4334	-	-	-	14.19	14.36	41.44	-37.91
7.33	2.61	139.73	0.5332	-	-	-	14.43	14.70	41.41	-37.07
7.50	1.56	146.20	0.6815	-	-	-	14.57	15.04	41.69	-36.16
7.67	2.32	142.04	0.7155	-	-	-	14.95	15.67	40.66	-35.51
7.83	1.59	125.64	0.8298	-	-	-	15.41	16.27	39.95	-37.24
8.00	2.32	133.26	0.5155	-	-	-	15.41	16.55	39.23	-32.54
8.17	2.78	143.33	0.4164	-	-	-	15.73	16.57	39.44	6.08
8.33	1.40	117.35	0.8430	-	-	-	16.45	17.17	38.83	31.79

## EMCOT #2: 28 May 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
8.50	1.08	165.58	0.5441	-	-	-	18.36	18.08	36.70	263.83
8.67	1.41	75.04	0.8147	-	-	-	19.29	18.64	33.47	313.47
8.83	1.55	7.05	0.4039	-	-	-	19.09	19.07	30.63	293.71
9.00	1.49	9.08	0.5612	-	-	-	19.94	19.47	31.50	277.56
9.17	1.53	356.04	0.4707	-	-	-	21.51	19.61	29.73	261.72
9.33	2.05	320.49	0.5444	-	-	-	20.51	19.87	29.50	290.48
9.50	2.43	335.97	0.6603	-	-	-	20.07	20.17	29.53	348.34
9.67	2.39	329.76	0.7504	-	-	-	20.66	20.66	26.79	371.55
9.83	1.84	327.90	0.5718	-	-	-	20.65	20.96	26.22	385.46
10.00	1.12	60.66	0.8006	-	-	-	21.69	21.56	24.80	400.15
10.17	2.24	313.71	0.7299	-	-	-	21.50	21.93	22.91	413.83
10.33	1.67	297.68	1.3330	-	-	-	21.85	21.91	23.57	447.13
10.50	2.00	283.08	0.8009	-	-	-	22.93	22.28	23.02	466.38
10.67	2.33	278.21	0.7545	-	-	-	22.23	22.22	22.81	481.46
10.83	1.83	310.66	1.1651	-	-	-	22.56	22.41	23.10	496.98
11.00	1.95	334.17	1.2422	-	-	-	22.94	22.77	23.26	513.06
11.17	2.96	315.46	0.8546	-	-	-	23.47	23.24	20.88	529.70
11.33	2.52	356.47	1.1590	-	-	-	23.24	23.14	18.58	549.57

## EMCOT #2: 4 June 1993

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
3.50	1.67	154.86	0.8377	-	-	-	6.40	6.73	52.71	-72.63
3.67	1.97	151.43	0.4535	-	-	-	6.07	6.47	53.67	-72.56
3.83	1.74	153.66	0.5935	-	-	-	6.08	6.33	53.92	-72.44
4.00	1.67	139.39	0.8173	-	-	-	6.14	6.36	53.69	-72.29
4.17	1.61	150.23	0.7990	-	-	-	6.18	6.44	53.09	-72.34
4.33	1.72	136.02	1.0365	-	-	-	6.42	6.58	52.27	-72.47
4.50	1.71	149.30	1.0144	-	-	-	6.54	6.66	51.97	-72.44
4.67	1.83	149.27	0.9754	-	-	-	6.42	6.59	52.14	-71.60
4.83	1.89	147.71	0.7354	-	-	-	6.45	6.64	51.74	-70.30
5.00	1.58	166.56	0.9165	-	-	-	6.32	6.58	51.95	-69.53
5.17	1.54	150.10	0.9932	-	-	-	6.32	6.57	51.76	-69.08
5.33	1.45	169.35	1.0366	-	-	-	6.38	6.62	51.29	-68.99
5.50	2.32	144.88	0.4595	-	-	-	6.52	6.72	50.64	-69.06
5.67	1.39	165.24	0.7188	-	-	-	6.29	6.61	50.84	-69.24
5.83	1.91	153.32	0.5403	-	-	-	6.03	6.42	51.22	-66.51
6.00	1.53	165.79	1.1371	-	-	-	6.19	6.42	51.06	-60.78
6.17	1.29	184.33	1.2004	-	-	-	6.40	6.58	50.38	-54.01
6.33	1.82	149.62	1.0543	-	-	-	6.81	6.84	49.32	-46.55
6.50	1.59	133.09	0.7014	-	-	-	7.43	7.45	47.24	-41.29
6.67	0.74	117.26	0.7537	-	-	-	6.93	7.36	48.14	-40.77
6.83	0.94	121.17	1.1470	-	-	-	6.46	7.12	49.48	-41.63
7.00	1.39	146.21	0.6552	-	-	-	6.59	7.02	50.14	-39.54
7.17	1.43	145.03	0.6887	-	-	-	6.59	6.86	51.94	-38.96
7.33	1.82	139.29	0.5368	-	-	-	6.74	6.90	52.71	-36.95
7.50	1.75	124.29	0.5797	-	-	-	7.61	7.48	51.38	-26.83
7.67	1.15	115.39	0.6608	-	-	-	8.21	8.31	50.20	-16.75
7.83	1.13	127.51	0.4201	-	-	-	9.10	9.21	48.44	40.98

## EMCOT #2: 4 June 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
8.00	0.95	123.39	0.4482	-	-	-	10.27	10.13	46.21	111.46
8.17	1.09	130.43	0.3194	-	-	-	10.70	10.50	43.90	103.42
8.33	0.87	131.26	0.5056	-	-	-	11.06	10.87	43.67	98.41
8.50	0.69	156.58	0.9693	-	-	-	11.28	11.11	43.94	150.65
8.67	0.60	109.11	0.8104	-	-	-	12.09	11.71	43.82	155.77
8.83	0.55	32.17	0.8003	-	-	-	12.60	12.25	43.08	183.17
9.00	0.85	15.16	0.8110	-	-	-	12.37	12.45	40.90	146.71
9.17	0.74	16.14	0.4446	-	-	-	12.11	12.27	41.87	143.67
9.33	0.92	12.42	0.7183	-	-	-	12.95	12.68	38.76	273.88
9.50	0.71	328.84	1.2832	-	-	-	13.50	13.36	37.18	264.06
9.67	0.73	344.66	0.7591	-	-	-	14.41	14.13	35.24	294.66
9.83	1.18	5.09	1.0904	-	-	-	14.51	14.54	32.45	327.63
10.00	0.76	1.68	0.8433	-	-	-	14.72	14.80	30.46	276.46
10.17	1.22	332.78	0.7866	-	-	-	14.89	14.90	30.86	200.43
10.33	2.11	332.08	0.5292	-	-	-	13.33	13.98	35.55	102.25
10.50	1.53	348.05	0.4205	-	-	-	12.47	12.92	39.04	57.72
10.67	1.21	336.38	0.4929	-	-	-	12.34	12.50	40.35	77.61
10.83	1.26	0.20	0.7245	-	-	-	12.48	12.49	40.62	119.67
11.00	1.17	309.77	0.6358	-	-	-	13.25	12.96	40.36	197.00
11.17	1.14	342.18	0.5510	-	-	-	13.80	13.46	40.61	236.90
11.33	1.07	348.54	0.6601	-	-	-	14.35	14.06	39.38	317.95

## EMCOT #2: 10 June 1993

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
3.00	1.20	153.10	0.8576	0.76	-	-	10.57	11.03	39.88	-50.08
3.17	1.90	143.98	0.4770	1.33	-	-	10.55	11.01	40.68	-51.53
3.33	1.22	147.24	0.6400	0.87	-	-	10.37	10.81	42.09	-54.41
3.50	1.95	149.96	0.6307	1.37	-	-	10.49	10.90	42.77	-51.19
3.67	1.82	150.38	0.4725	1.24	-	-	10.59	10.92	43.13	-48.86
3.83	1.58	149.18	0.7521	1.09	-	-	10.48	10.85	43.84	-48.52
4.00	1.23	145.55	0.5757	0.81	-	-	10.30	10.71	44.73	-48.66
4.17	1.34	134.02	1.0302	1.01	-	-	10.20	10.68	45.33	-48.45
4.33	1.18	159.04	0.9072	0.92	-	-	10.55	10.88	44.84	-50.90
4.50	1.24	163.25	0.8743	0.76	-	-	10.23	10.76	45.32	-52.76
4.67	1.36	155.45	0.7969	0.96	-	-	10.18	10.70	45.57	-53.82
4.83	1.15	162.98	0.8877	0.66	-	-	9.93	10.53	46.13	-57.46
5.00	1.38	155.16	0.6199	0.97	-	-	9.86	10.45	46.41	-58.41
5.17	1.01	165.03	1.0760	0.64	-	-	9.82	10.43	46.44	-58.60
5.33	1.39	152.51	0.5832	0.82	-	-	9.68	10.35	46.68	-58.32
5.50	1.56	150.32	0.6634	0.99	-	-	9.64	10.25	46.80	-58.67
5.67	2.06	146.17	0.4389	1.49	-	-	9.89	10.24	46.70	-58.18
5.83	1.79	145.69	0.5876	1.11	-	-	9.78	10.20	46.63	-56.80
6.00	1.66	153.17	0.7232	1.19	-	-	9.78	10.20	46.37	-52.77
6.17	2.02	149.93	0.5263	1.31	-	-	8.49	14.65	41.01	31.17
6.33	1.73	147.32	0.5618	1.21	-	-	10.01	10.34	45.72	-44.65
6.50	1.58	158.22	0.5531	1.10	-	-	10.00	10.39	45.57	-39.67
6.67	1.47	145.60	0.5908	0.95	-	-	10.10	10.48	45.39	-39.65
6.83	1.54	160.76	0.7205	1.03	-	-	10.22	10.64	45.04	-39.68
7.00	1.50	152.54	0.7891	1.15	-	-	10.50	10.87	44.78	-35.89
7.17	1.49	140.32	0.7891	1.08	-	-	10.96	11.24	44.29	-28.92
7.33	1.45	146.48	0.8130	0.90	-	-	11.39	11.65	44.18	-25.69

## EMCOT #2: 10 June 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
7.50	1.31	140.73	0.5273	0.90	-	-	11.85	12.11	43.73	-21.53
7.67	1.08	140.09	0.6167	0.73	-	-	12.16	12.64	43.55	-16.31
7.83	1.64	144.14	0.4172	1.26	-	-	12.77	13.31	42.69	-13.56
8.00	1.33	161.80	0.9507	1.01	-	-	13.35	13.76	42.34	-3.49
8.17	0.72	3.24	1.1945	0.49	-	-	13.49	14.49	41.71	-5.99
8.33	0.81	333.66	0.6983	0.62	-	-	13.53	15.01	40.84	29.91
8.50	0.74	334.86	0.9977	0.46	-	-	14.32	15.44	40.80	242.13
8.67	0.75	13.04	0.5170	0.53	-	-	15.57	15.85	36.62	299.67
8.83	0.72	50.49	1.0169	0.48	-	-	16.74	16.41	32.38	305.22
9.00	0.82	72.55	0.3829	0.50	-	-	17.54	17.10	29.48	295.58
9.17	0.74	13.65	0.2884	0.45	-	-	18.23	17.79	25.21	317.71
9.33	1.05	0.13	0.6737	0.63	-	-	19.17	17.78	22.61	356.17
9.50	1.41	287.82	0.4160	1.22	-	-	17.71	17.79	28.29	371.34
9.67	0.86	309.78	0.9725	0.74	-	-	17.84	17.96	29.81	394.56
9.83	0.68	75.44	1.0846	0.55	-	-	19.38	18.76	25.11	423.96
10.00	1.00	307.78	0.9308	0.70	-	-	19.62	19.19	26.51	439.74
10.17	1.38	306.31	0.6731	1.26	-	-	18.76	19.01	26.18	458.04
10.33	1.21	309.12	0.9378	1.14	-	-	18.84	18.99	25.17	476.73
10.50	1.34	303.71	0.5723	1.17	-	-	18.85	19.03	24.37	495.51
10.67	1.30	320.04	0.8330	1.02	-	-	18.92	18.91	24.65	513.87
10.83	0.98	262.28	1.1043	0.90	-	-	19.72	19.30	23.71	531.77
11.00	1.06	339.97	0.7066	0.89	-	-	20.38	19.85	24.50	548.11
11.17	1.31	316.11	0.7954	1.15	-	-	20.26	20.24	22.59	560.73
11.33	1.16	344.74	0.6987	0.91	-	-	20.72	20.42	22.37	578.26
11.50	1.25	319.05	0.7232	1.26	-	-	20.46	20.48	20.98	591.26
11.67	1.22	331.02	0.7217	1.10	-	-	20.71	20.80	21.02	603.30

## EMCOT #3: 28 May 1993

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
2.83	1.34	153.08	0.4626	1.26	141.45	0.5603	16.90	17.31	34.87	-69.43
3.00	1.40	299.10	1.1061	1.43	308.71	1.1258	16.64	17.50	32.43	-68.47
3.17	1.98	205.94	0.4686	1.84	204.59	0.4854	17.31	17.62	32.42	-70.51
3.33	0.96	107.36	0.5862	1.08	76.82	0.9505	17.20	17.48	32.75	-69.09
3.50	1.46	275.81	0.6885	1.48	284.07	0.6827	17.30	17.56	32.04	-69.70
3.67	1.37	238.21	0.8180	1.34	233.69	0.9182	17.18	17.48	32.40	-71.32
3.83	1.45	215.58	0.6439	1.43	210.31	0.6281	17.03	17.48	31.39	-69.01
4.00	1.47	215.60	1.3043	1.49	226.11	1.4013	17.79	17.78	29.66	-69.48
4.17	1.07	219.14	0.4881	1.09	213.32	1.0180	16.72	17.55	31.07	-68.36
4.33	1.70	213.43	0.3982	1.57	220.71	0.4392	16.14	17.07	32.59	-68.49
4.50	1.23	211.84	0.6481	1.27	200.05	0.7234	16.18	16.67	33.48	-69.32
4.67	1.58	182.28	0.6094	1.47	183.71	0.6643	16.09	16.43	34.29	-67.61
4.83	0.91	144.25	0.9805	1.02	132.52	1.1021	15.61	16.18	35.39	-67.55
5.00	0.77	66.17	1.2502	0.91	52.47	1.1865	15.05	15.72	37.07	-66.14
5.17	1.45	140.25	0.7384	1.37	146.43	0.7402	14.81	15.31	38.74	-65.79
5.33	1.86	123.88	0.3349	1.78	125.01	0.3615	15.10	15.35	39.04	-66.13
5.50	1.60	97.68	0.4268	1.29	95.29	0.4648	15.15	15.33	39.50	-66.38
5.67	1.32	60.51	0.5347	1.14	57.30	0.5087	14.87	15.26	39.70	-65.15
5.83	1.41	63.34	0.3050	1.31	74.76	0.4668	15.16	15.36	38.76	-62.85
6.00	1.10	58.21	1.1290	0.93	312.68	1.5093	15.26	15.68	37.97	-60.81
6.17	1.81	123.32	0.2325	1.73	121.98	0.2479	14.66	15.23	39.69	-57.21
6.33	1.49	99.16	0.3683	1.34	100.30	0.3583	14.60	14.85	41.37	-52.40
6.50	1.39	93.81	0.4337	1.11	110.02	0.5289	14.78	14.89	41.64	-46.63
6.67	2.18	80.40	0.4365	1.73	86.21	0.4982	15.04	15.07	41.15	-42.37
6.83	2.28	77.10	0.4632	1.87	68.29	0.5461	14.99	15.10	41.51	-37.81
7.00	2.47	83.86	0.4642	2.09	89.31	0.5395	15.48	15.31	41.59	30.33
7.17	2.38	79.03	0.5153	1.99	82.23	0.5420	16.14	15.83	41.02	59.85

## EMCOT #3: 28 May 1993 (continued)

73

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
7.33	2.07	65.20	0.5839	1.79	55.18	0.6648	16.23	16.14	40.95	84.21
7.50	1.90	93.73	0.5326	1.66	91.64	0.6830	16.93	16.55	40.66	109.18
7.67	1.32	109.55	0.4985	1.21	117.04	0.5708	17.59	17.05	39.93	134.91
7.83	1.20	70.58	0.7965	1.12	56.11	0.8612	18.08	17.69	39.13	157.80
8.00	1.37	123.03	0.6513	1.25	138.49	0.7544	18.23	17.97	39.13	180.86
8.17	1.51	156.67	0.5940	1.51	166.25	0.6109	18.44	18.14	39.30	198.93
8.33	1.05	155.56	0.8082	1.04	164.23	0.8591	18.52	18.25	39.33	225.60
8.50	1.41	173.24	0.5023	1.29	176.14	0.6892	19.08	18.74	38.32	248.82
8.67	1.65	194.23	0.2691	1.65	199.38	0.2793	19.02	18.86	36.04	274.52
8.83	1.21	238.65	0.3933	1.24	248.20	0.3711	19.44	19.38	35.08	294.45
9.00	1.13	277.00	0.4561	1.18	280.38	0.5334	19.33	19.73	35.26	301.85
9.17	1.21	237.75	0.4870	1.22	236.87	0.7414	19.86	20.06	34.87	291.38
9.33	1.64	221.30	0.3744	1.64	221.47	0.4240	20.15	20.09	34.02	316.43
9.50	2.24	212.74	0.3915	2.23	214.59	0.3762	20.35	20.17	33.39	66.82
9.67	2.23	206.14	0.2883	2.23	207.47	0.3595	20.63	20.30	32.08	-75.53
9.83	2.17	216.48	0.3471	2.14	221.77	0.4032	20.57	20.43	31.20	382.64
10.00	2.06	224.43	0.3529	2.06	229.13	0.3378	21.05	20.73	29.80	420.87
10.17	1.69	246.24	0.6523	1.69	244.65	0.7241	21.06	21.03	30.56	434.55
10.33	1.83	224.05	0.4099	1.84	223.96	0.4187	21.72	21.51	30.32	468.61
10.50	1.50	235.91	0.8289	1.55	232.56	1.0311	21.53	21.54	29.28	486.87
10.67	1.42	236.10	0.6285	1.42	237.98	0.8391	21.57	22.06	29.10	502.55
10.83	1.54	256.88	0.8560	1.51	254.08	0.8822	22.08	22.42	29.33	494.00
11.00	2.13	211.00	0.5687	2.01	214.25	0.6097	22.83	22.55	28.22	528.72
11.17	2.81	219.49	0.6378	2.70	224.13	0.6193	22.96	22.66	25.67	547.70

## EMCOT #3: 4 June 1993

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
3.33	3.66	80.44	0.4759	3.04	82.75	0.4940	8.07	8.10	50.42	-75.07
3.50	3.61	86.88	0.4960	3.10	93.01	0.4988	7.66	7.83	51.24	-74.37
3.67	3.81	82.92	0.3652	3.18	86.20	0.4295	7.68	7.73	51.44	-73.49
3.83	4.25	83.65	0.3720	3.50	88.86	0.3971	7.46	7.52	52.03	-72.54
4.00	3.96	82.36	0.4102	3.28	84.30	0.4165	7.39	7.43	52.25	-72.45
4.17	4.24	86.66	0.3783	3.43	88.99	0.3879	7.42	7.43	52.09	-72.27
4.33	4.34	84.11	0.3706	3.76	85.99	0.4336	7.48	7.45	51.80	-72.36
4.50	4.53	86.67	0.3680	3.78	90.60	0.4354	7.43	7.45	51.73	-72.33
4.67	4.15	91.58	0.3771	3.47	95.27	0.4291	7.41	7.43	51.85	-71.60
4.83	4.39	84.31	0.3742	3.57	86.06	0.4258	7.49	7.47	51.58	-70.43
5.00	4.13	87.59	0.4723	3.45	93.48	0.5010	7.45	7.48	51.48	-69.44
5.17	3.97	94.80	0.4533	3.35	102.29	0.4846	7.49	7.48	51.34	-69.10
5.33	3.93	93.54	0.4225	3.29	102.32	0.4582	7.49	7.52	51.02	-69.28
5.50	3.80	85.13	0.4031	3.23	87.02	0.4429	7.69	7.62	50.35	-69.26
5.67	3.33	91.15	0.4105	2.75	95.57	0.4796	7.87	7.84	49.51	-68.80
5.83	3.71	81.88	0.4387	3.09	84.55	0.5161	7.59	7.68	49.81	-65.41
6.00	3.88	80.14	0.4068	3.04	78.51	0.4424	7.43	7.52	50.17	-57.99
6.17	3.73	67.93	0.4477	3.07	68.31	0.5126	7.92	7.79	48.99	-49.52
6.33	3.20	84.32	0.5949	2.82	87.47	0.6133	8.17	8.13	47.79	-40.39
6.50	2.21	162.36	0.4305	2.13	160.95	0.4269	8.29	8.30	50.77	-32.87
6.67	1.63	44.51	0.4560	1.49	51.10	0.5415	8.12	8.17	54.39	-30.20
6.83	1.83	53.62	0.3805	1.51	55.84	0.4456	8.25	8.27	52.81	-28.45
7.00	2.24	45.28	0.5403	1.99	35.00	0.5921	8.22	8.32	49.04	-15.65
7.17	2.59	87.64	0.3606	2.26	93.84	0.4554	8.07	8.18	49.82	-10.01
7.33	2.01	125.66	0.7176	1.75	132.31	0.7200	8.40	8.28	50.22	27.92
7.50	1.61	125.92	0.6016	1.52	134.40	0.5783	9.31	8.87	50.03	106.46
7.67	1.16	119.23	0.7518	1.14	129.35	0.7609	10.14	9.65	50.49	142.98

## EMCOT #3: 4 June 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )	
5	7.83	1.07	106.00	0.4931	1.04	115.43	0.5449	11.10	10.42	48.45	188.81
	8.00	1.07	76.29	0.4324	1.10	75.95	0.5971	11.36	11.08	46.52	162.11
	8.17	0.97	57.42	0.5082	0.92	63.89	0.5940	11.45	11.43	45.73	132.24
	8.33	1.11	45.16	0.5929	1.09	39.81	0.6754	11.48	11.59	44.91	133.32
	8.50	0.80	343.77	0.7373	0.90	334.09	0.7146	11.43	11.71	43.82	184.72
	8.67	0.66	211.74	0.7718	0.71	227.95	0.8237	12.24	12.15	43.18	173.95
	8.83	0.91	214.64	0.6035	0.98	219.97	0.5448	12.57	12.51	43.37	202.84
	9.00	1.46	231.17	0.6620	1.48	231.04	0.6199	12.68	12.73	42.01	166.92
	9.17	1.24	188.95	0.4474	1.27	202.28	0.5441	12.34	12.41	41.77	166.31
	9.33	1.05	140.32	0.3740	1.06	139.78	0.4463	13.56	12.97	39.81	302.03
	9.50	1.18	33.04	0.9131	1.23	24.91	0.9535	13.93	13.81	38.48	254.59
	9.67	1.15	237.79	1.3717	1.23	227.15	1.3634	13.74	13.99	37.81	248.90
	9.83	1.79	198.76	0.9288	1.79	207.65	0.9561	14.79	14.50	38.16	290.06
	10.00	2.00	197.13	0.6603	1.94	195.72	0.6835	14.69	14.57	37.32	293.56
	10.17	2.55	244.88	0.3011	2.50	247.28	0.3681	14.52	14.73	36.40	206.63
	10.33	4.36	214.79	0.2577	4.01	217.40	0.2783	13.40	13.69	39.79	110.99
	10.50	3.29	222.67	0.2565	3.10	226.26	0.2824	13.03	13.03	41.69	65.93
	10.67	2.77	218.12	0.2755	2.58	221.34	0.2859	13.02	12.95	42.59	86.70
	10.83	2.41	209.36	0.4029	2.33	212.41	0.4528	12.87	12.80	42.67	131.31
	11.00	1.64	238.71	0.5828	1.66	247.55	0.6719	13.27	13.14	42.82	216.87
	11.17	2.70	229.38	0.3296	2.55	229.16	0.3592	13.55	13.44	42.78	265.26
	11.33	2.50	224.41	0.5494	2.41	229.55	0.5473	14.02	13.76	41.73	340.84

## EMCOT #3: 10 June 1993

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
3.17	3.10	101.49	0.3502	2.64	119.05	0.3950	12.07	12.14	41.40	-54.08
3.33	3.54	93.79	0.3340	2.97	104.97	0.4357	11.90	12.03	42.23	-56.28
3.50	3.10	102.42	0.3875	2.67	117.66	0.4171	11.78	11.86	43.40	-53.25
3.67	3.65	88.52	0.4007	3.09	97.03	0.4454	12.07	12.00	43.70	-50.70
3.83	3.46	86.91	0.3486	2.82	94.11	0.4441	12.07	12.12	43.82	-50.16
4.00	3.76	85.23	0.3704	3.10	91.80	0.4227	12.02	12.07	44.20	-50.21
4.17	3.56	77.17	0.3546	2.90	82.13	0.4266	11.93	11.99	44.65	-50.87
4.33	3.97	81.28	0.3893	3.27	85.14	0.4527	11.94	12.00	44.78	-53.46
4.50	3.57	85.87	0.3562	3.06	90.92	0.3980	11.82	11.90	45.16	-55.29
4.67	3.70	82.91	0.3597	2.92	88.95	0.3907	11.76	11.83	45.43	-57.22
4.83	3.87	80.31	0.4052	3.28	81.93	0.4564	11.74	11.79	45.63	-61.05
5.00	3.60	85.26	0.3503	2.98	92.29	0.3972	11.66	11.74	45.78	-62.52
5.17	3.29	87.93	0.4059	2.88	96.03	0.4981	11.56	11.65	45.97	-62.58
5.33	3.50	92.15	0.3897	3.01	104.16	0.4268	11.44	11.55	46.17	-62.76
5.50	3.40	93.78	0.3650	2.80	106.09	0.4244	11.42	11.51	46.16	-62.48
5.67	3.54	87.53	0.4294	2.90	95.22	0.4969	11.42	11.47	46.08	-61.68
5.83	3.87	85.57	0.3774	3.14	91.39	0.4267	11.26	11.39	46.09	-59.36
6.00	3.67	85.86	0.3970	2.98	97.09	0.4402	11.20	11.30	46.06	-53.75
6.17	3.83	93.92	0.3755	3.35	107.11	0.4513	11.24	11.26	45.97	-46.55
6.33	3.84	80.30	0.3859	3.15	83.93	0.4792	11.48	11.45	45.42	-40.55
6.50	3.83	75.85	0.3532	3.02	82.64	0.4405	11.56	11.59	45.09	-33.95
6.67	4.00	77.71	0.3757	3.28	83.68	0.4336	11.65	11.66	44.93	-31.17
6.83	3.78	81.84	0.3694	3.05	88.94	0.4288	11.82	11.81	44.68	-29.04
7.00	3.42	89.57	0.3884	2.80	99.30	0.4712	12.19	12.10	44.29	2.39
7.17	2.87	102.62	0.4147	2.66	119.77	0.4502	12.63	12.49	43.92	60.68
7.33	2.92	94.07	0.4577	2.52	106.80	0.5160	13.12	12.96	43.42	104.69
7.50	2.26	107.95	0.4327	1.99	122.89	0.5191	13.64	13.44	43.03	118.39

## EMCOT #3: 10 June 1993 (continued)

Time of Day (hrs)	Upper Wind Speed (m/sec)	Upper Wind Dir (deg)	Upper Azimuth Std Dev (rad)	Mid Wind Speed (m/sec)	Mid Wind Dir (deg)	Mid Azimuth Std Dev (rad)	Lower Temp (deg C)	Upper Temp (deg C)	Rel Hum (percent)	Net Rad (W/cm <sup>2</sup> )
7.67	2.25	103.73	0.3683	2.01	121.24	0.3607	14.14	13.90	42.63	160.39
7.83	1.60	165.91	0.4163	1.62	182.03	0.4345	14.08	14.02	42.03	178.58
8.00	1.33	202.15	0.2889	1.41	222.36	0.3614	14.06	13.99	41.04	190.25
8.17	0.81	150.94	0.8922	0.79	173.08	1.0621	14.98	14.57	41.09	219.84
8.33	1.12	28.70	0.7449	1.15	39.10	0.7017	15.91	15.40	41.38	238.07
8.50	0.87	305.19	0.3737	0.95	331.88	0.3451	15.34	15.60	40.98	244.70
8.67	0.64	34.79	0.9990	0.51	34.52	0.9418	16.65	16.30	39.75	277.53
8.83	0.58	127.98	0.6769	0.55	211.51	1.0836	17.48	17.20	37.57	308.69
9.00	1.08	186.62	0.4258	1.12	203.89	0.5532	17.67	17.49	37.08	308.94
9.17	1.67	214.64	0.2393	1.69	235.93	0.2570	17.26	17.35	36.89	333.33
9.33	1.78	208.19	0.2004	1.83	232.82	0.2168	16.93	16.87	35.59	366.37
9.50	1.57	197.79	0.2988	1.63	220.79	0.3659	16.91	16.65	35.44	204.71
9.67	1.07	197.02	0.4014	1.19	228.71	0.4537	17.13	17.08	35.49	279.71
9.83	1.24	195.56	0.7701	1.27	224.26	0.8129	18.35	17.93	34.75	-71.46
10.00	1.95	216.89	0.4257	1.93	243.45	0.4775	18.08	18.07	35.13	427.52
10.17	1.79	202.16	0.3687	1.79	220.81	0.5980	18.26	17.97	33.71	479.13
10.33	2.17	201.35	0.3525	2.11	223.98	0.4605	17.95	17.99	31.62	496.55
10.50	1.45	193.17	0.6098	1.39	205.21	0.6657	18.41	18.03	31.95	512.36
10.67	1.60	176.12	0.4409	1.64	191.13	0.4612	18.62	18.44	31.82	528.30
10.83	1.39	277.53	0.9233	1.49	311.39	0.9290	18.86	19.09	32.02	542.52
11.00	2.04	233.32	0.6458	2.01	263.00	0.8118	19.24	19.54	30.53	526.13
11.17	2.08	202.91	0.4360	1.96	226.97	0.5698	19.63	19.30	28.03	569.88
11.33	2.05	215.46	0.4353	1.94	240.69	0.5189	19.63	19.57	27.60	582.94
11.50	2.01	188.32	0.5611	1.97	213.25	0.6940	20.00	19.77	28.30	591.69
11.67	2.02	226.85	0.4601	2.03	247.01	0.5103	20.38	20.10	27.12	598.70



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